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# Natura, Philoſophia, & Ars IN CONCORDIA.

OR,

# NATURE, PHILOSOPHY, and ART IN FRIENDSHIP,

# An ESSAY.

In FOUR PARTS.

I. Demonſtrating the Neceſſity and Practicability of Building all Manner of Houſes proof againſt Fire and Vermin; together with ſeveral curious and uſeful Obſervations on Subjects relative thereto.

II. An entire new Plan of conſtructing chimnies, ſo as the ſmoke cannot reverberate.

III. Plain Methods pointed out, by which ſmoky chimnies may be effectually cured.

IV. Certain and eaſy Directions to all Mechanics in Wood, how to finiſh Houſhold Furniture, and the wainſcotting of Rooms, ſo as no Vermin can exiſt therein; and alſo how to cleanſe thoſe already infected.

With DRAWINGS and REFERENCES.

To which is added,

SIX LETTERS ON INTERESTING SUBJECTS.

By W. CAUTY, *Cabinet-maker.*

LONDON:

Printed for the AUTHOR; and ſold by W. NICOLL, in St. Paul's Church-yard; ISAAC TAYLOR, in Holborn, near Chancery-lane; and F. JONES, in Lower Groſvenor-ſtreet.

MDCCLXXII.

[ Price Two Shillings. ]

# DEDICATION,

## Addreſſed to the PUBLIC by the AUTHOR.

THE eſſays in this little work come like a drop'd foundling into the world, begging your kind protection; and the Author humbly hopes, if there be found in them any eſſential merit, they may proſper better in your hands, than many uſhered into life with pomp and magnificence, under the patronage of the great and opulent.

It may be ſaid with truth, that his deſigns are well intended; and he frankly owns, the hopes of pro-

moting his real buſineſs, a generous ambition to be of ſome ſervice to the Public, and the approbation the MSS. met with from ſeveral friends of unqueſtionable merit, particularly the late moſt excellent and ingenious Lord EGMONT, were the principal cauſes of his venturing on the public theatre. Add to theſe motives, ſeveral of his letters on various and intereſting ſubjects, which have appeared in the public papers, under the ſignature of *W. Benevolus*, which were well received, encouraged him at laſt to venture the eſſays in queſtion to the public's cenſure or approbation; being fully convinced that their voice on all ſubjects of this nature is the moſt eſſential proof of their value

value or demerit. Whatever that may be, I ſhall acquieſce with the greateſt complacency imaginable, and am the Public's

Moſt devoted and

Moſt obedient Servant,

WM. CAUTY,

Cabinet-maker and Archt.
King's-ſtreet, St. James's.

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# THE PREFACE.

THE happineſs of mankind has ever engroſſed the attention of the benevolent and well-diſpoſed, and the moſt ſucceſsful therein have been generally requited with the grateful acknowledgments, not only of their own, but of after-times.

It is true many have ſhewn ingenuity without ſucceſs; however their diſappointments were ſtill alleviated by the conſciouſneſs of a good intention, which the generous and diſintereſted are ready to acknowledge upon every occaſion.

It is univerſally allowed that every perſon's happineſs conſiſts in the goodneſs of

his diſpoſition, and the actions reſulting therefrom; and this happineſs muſt flow no leſs from a preſent enjoyment than from a proſpect of what is to come; the moſt rational entertainment therefore to a good man, is to do what may be beneficial to ſociety.

How have the Alexanders, the Conquerors, or rather deſtroyers of mankind, been deified by the unthinking multitude; what caſtles and fortreſſes have been erected, under the ſpecious pretext of preſerving the lives of mankind? while tyranny and oppreſſion were really the principal motives. And it is obſervable, that of 200 battles that have been fought in Europe during the laſt and preſent century, three-fourths have been occaſioned from a contention about fortified towns.

Had the conquerors of nations, either

antient or modern, built their cities, or perſons of property among ourſelves, reared there palaces in the manner here recommended, many of theſe had been ſtill ſtanding, and multitudes of people had been preſerved from ſudden and unexpected deaths.

It is never too late to amend, ſaid a good-natured antient, nor yet to improve upon a ſubject; and this before us is of the moſt ſerious kind. It would be endleſs to enumerate the ſad cataſtrophes that have happened through the kingdom in general, and particularly in this great metropolis, ſince the fire of London 1666, all owing to a want of attention in the conſtruction of the different edifices. That terrible conflagration was occaſioned by an uſeleſs multiplicity of timber almoſt in every houſe, joined with the narrowneſs of the ſtreets: and though this dreadful burning gave riſe to

the

the firſt act of parliament made in the 19th year of Charles II. directing all builders, under paine and ſevere penalties, not to erect any wooden walls, or walls covered with plaiſter, either in fronts, ſides, or rears of their houſes, on any pretext whatſoever, higher than the bracemores; and theſe bracemores are ordered and fixed by the above act, to be only ten feet high from the ſhop floor; yet this act is evaded every day in London, by bow-windows, innumerable or illegal projecting wooden plaiſtered walls, carried up as high as the roofs of the houſes to which they are fixed.

For the good of all, eſpecially gentlemen of fortune and builders, for whom this treatiſe is principally intended, I heartily recommend to them that they would purchaſe all the acts relative to building, and ſtudy their true ſpirit and meaning, and practice

practice accordingly; then, and not before, their works will bear the leaſt ſcrutiny or examination. Beſides the act of Charles II. already mentioned, I recommend the acts of the 3d and 6th of Queen Anne, and that of Geo. I. and Geo. II. but more particularly the two laſt acts of our preſent ſovereign Geo. III. Ann. 4th and 6th. By peruſing them properly, and with due attention, they may turn out to be of great advantage, and prevent law-ſuits and other litigations: but if the builders of theſe baubles will neither hear nor forbear, but go on in ſuch illegal works, and adviſe both gentlemen and ſubſtantial tradeſmen to thoſe things, the pains and penalties will fall upon the principal builders and proprietors. All theſe acts may be had at the King's Printing-Office, in Weſt-Harding-Street, Shoe-Lane, for 6d each, except that of Charles II. which is half a crown.

Upon

Upon a ſerious review of what is already obſerved, we hope the axioth of every man's right to judge for himſelf, will appear to be weak and ill founded: for ſure every intelligent and impartial perſon muſt applaud a ſcheme which tends to promote the public good, ſince the intereſt of particulars is never to be put in the balance with that of millions! Had the plan here propoſed been put in execution ſixty or ſeventy years ago, it would have ſaved millions of money, and what is more, would have preſerved a number of valuable lives.

How many ſtately edifices, churches, palaces, cities, libraries of infinite value, kings and merchants ſtore-houſes, arſenals at home and abroad, have been deſtroyed by fire? the catalogue of which would almoſt form a volume of itſelf: the fact is notorious: the thinking and intelligent will ſee the force of the reaſoning in all its extent.

The

The ancients built their magnificent edifices and temples with very ſmall quantities of timber in them; witneſs Weſtminſter-abbey, and the famous cathedral at York, &c.

The moderns ſeem almoſt to have forgot to copy after them; and I will be bold to ſay, that if that incomparable extra dome of St. Paul's Cathedral, London, had been conſtructed without timber at all, but of beſt bricks and tarras, as the conic circle upon which the lanthorn reſts, it had been a finer piece, and done more honour not only to the memory of the great architect, but to the nation in general, and covered with copper-plates inſtead of lead, the latter having been melted in very hot weather.

It is highly probable that the firſt inhabitants of our globe lived in caves and holes;

and

and that architecture, like other ſciences, had its infancy and progreſs; but, like all other ingenious arts, will ever be wanting improvements; and may never poſſibly arrive to that ſummit of perfection that could be wiſhed for.

No doubt ſeveral carpenters will treat the method of building arſenals, and even warehouſes, with ſmall quantities of timber, as romantic and prepoſterous. However, we do not appeal to the intereſted, but to the impartial, begging they would conſider the nobleſt ſtructures reared by the antients; ſome of which have already exiſted above a thouſand years, and probably will till the end of time, as not being capable of being devoured by fire, which often reduces to aſhes in a few hours, the works of the moderns, which coſt millions of money, beſides many years labour and incredible pains.

Neither do I claim any great merit by this plan, except that of having endeavoured to improve in the art of building; and having met with ſome ingenious accounts of houſes built in France, years ago, which have anſwered the proprietor's expectations, I was encouraged to offer my endeavours to ſhew, that but ſmall quantities of timber ought or may be uſed, either in roofs, cielings, floors, or ſtairs, in compariſon of what is commonly buried there.

It is a ſhocking contemplation, that we are only to live and then to die, without attempting ſome real good to ſociety, or a deſire of real happineſs: this would be to level us with the brutes that periſh; whereas the very make and form of our bodies, and much more the faculties of our minds, ſhew that we were made for an hereafter: for man's countenance was turned by his Maker toward the ſtars. As

As the additional eſſays were well received by the public on their firſt appearance, we hope they will not now be diſagreeable, though ſomewhat foreign to the preceding part of the work.

*'Tis great delight to ſmile at ſome men's ways,*
*But higher ſtill, to give juſt merit praiſe.*

Natura,

# Natura, Philoſophia, & Ars IN CONCORDIA,

# NATURE, PHILOSOPHY, and ART IN FRIENDSHIP.

## An ESSAY.

AS in nature there are but two principles, matter and motion; and this matter is either fluid, as air, fire, water, mercury, and oil; or fixed, as earth, metal, minerals, ſtones, and diamonds; there are no ſenſible qualities reſulting from any of theſe, but what ariſe from their modifications,

the cauſe of which is owing to the figure, ſize, magnitude, and poſition of their conſtituent particles; the right conſideration of which is the immediate object of an impartial enquirer, who has no other object but that of preſerving the lives of his fellow-creatures, and being uſeful to ſociety.

The firſt thing to be enquired into by a builder, is the ſituation and extent of the ſpot upon which the ſtructure is to be reared.

The former belongs to the proprietor, but both to the principal ſurveyor. If in the foundation there be found any looſe or marſhy ground, let that be well piled and planked, or arches thrown over it, as was practiſed in the foundation of St. Paul's, London, by my late worthy friend Mr. *James Gibbs*, ſurveyor under the great architect Sir *Chriſtopher Wren*.

Great precaution ought to be taken in not digging too low, or removing a firm ſtratum of gravel, and building on the next lower one, which is commonly looſe and ſoft.

This

This error was notoriouſly practiſed in the foundation of the piers of Weſtminſter-bridge: Strange, indeed, to dig entirely away an excellent ſtratum of gravel near five foot thick, and then ſink their great caiſſon on the ſand, without a ſingle pile to ſupport it!

It was no wonder that one of the piers ſunk five feet, ſo ſoon as it received the weight of the two adjoining arches: it is ſurprizing the others did not go the ſame way.

Their only proper method was to clear the bed of the river, then pile with judgment in proportion to the ſtrength of the ground, which is only found by boring, and with the horizontal ſaw cut the piles off level with the bed of the river; afterwards let down their great caiſſon well directed, and 'tis hardly probable any misfortune would have happened. In which event two years labour had been prevented, and twenty-four thouſand pounds of the public money had been ſaved.

This famous bridge was begun in 1738, and in ten years the arches, *viz.* 15, with the balluſtrades were finiſhed, when the pier already mentioned ſunk five feet, for I meaſured it before it was taken down or obſerved by any other, and then it had preponderated four feet four inches: the two adjoining arches were entirely taken away, and the ſunk pier taken down to low water mark; but before they took down the two arches, the ſtrongeſt centers were placed under each, and then an immenſe quantity of old cannon, *&c.* laid on the ſunk pier, in order to depreſs it ſtill the more.

Two years were fully elapſed before the arches and balluſtrades were put in *ſtatu quo*, and £.12,000 were granted by parliament each of the two laſt years for finiſhing the whole; the total expence of the fabric amounted to £.3,12,000, a well laid-out ſum indeed, ſince the bridge is now one of the fineſt and moſt uſeful in the world, and every way convenient both for the town and the country.

[The

[The north end of it lies within 800 feet of Weſtminſter-hall, a ſtructure that raiſes the admiration of all. It was built by *William Rufus*, ſon and ſucceſſor to *William the Conqueror*, about the year 1095, and now is the ſeat of juſtice, the different courts being held there.

Adjoining to this ſtupendous hall, are both houſes of parliament; and hard by ſtands that ancient and wonderful ſtructure, Weſtminſter-abby.]

This celebrated bridge acroſs one of the moſt famous rivers in Europe, contains fifteen ſemi-circular arches, and occupies the ſpace of 1500 feet from ſhore to ſhore; the centre arch is 76 feet, the other arches decline four feet each, ſo that the ſecond and fourteenth are 48 feet each, and the firſt and fifteenth are only 30.

The balluſtrade is ſtrong, well deſigned and nobly executed, ſeven feet high, conſiſts of a ſtone pedeſtal three feet high; the baniſters three feet high and twelve inches ſquare, and the cornice one foot

thick; no moulding but an hollow to throw off the drip. On the centre of this balluſtrade is a large pedeſtal, deſigned for an hieroglyphical figure, ſhewing the great utility of the river as to commerce, and the conveniency of paſſengers.

We ſhall only add, that our criticiſms and obſervations are well intended, and that the excellence of the whole is ſo truly great, that

Such as paint it trueſt, praiſe it moſt.

As we have touched a little upon Weſtminſter-bridge, it will not be impertinent to make a few remarks upon the bridge at Black-fryars, and which are ſubmitted to the judgment of the learned.

The city committee directed to conduct the operations of Black-fryars ſtone bridge, publiſhed advertiſements in September and October, 1759, inviting the ingenious to give in plans, elevations, and eſtimates, concerning the building of this ſtructure. In conſequence of this, twenty different plans were given in, and the au-

thor of this treatiſe, from the circumſtance of his ſirname beginning with a *C*, was the ſecond to be called in, on the firſt day of November that year at Guildhall; he produced his plan before the Lord Mayor, who was then in the chair, and the Court of Aldermen; it conſiſted of eleven ſemi-circular arches, the middle one an hundred and ten feet in diameter, the other four on either ſide diminiſhing ten feet each toward the ſhores, while the firſt and eleventh that joined the land were but thirty-four feet each ſpan, containing in all from ſhore to ſhore, including the piers, eleven hundred feet.

In this plan I alſo deſigned and explained the neceſſity of a high-ſided caiſſon of 28 feet, by which the workmen might be protected from every obſtruction, even that of the tides themſelves. This they obſerved exactly in theirs, and adopted the method laid down by *C*. in all its particulars, reſpecting their caiſſons and foundations: a method that greatly forwarded the work, and bought by experience, as

the caiſſons in which Weſtminſter piers were built were but ten feet high, and in every high tide the workmen were obliged to give over until the piers were above high water mark.

I borrowed the ſtairs, balluſtrade and pedeſtal, from Weſtminſter, and wiſh theſe had been adopted in the Black-fryars ſtructure, which indeed are pretty little things, and well ſet, (I mean the balluſtrade and pedeſtal) but too low by two feet, as they are troubleſome to people of an ordinary ſize, and neither ſafe nor agreeable to children: beſides, ſtrength and grandeur, thoſe eſſentials of every public work, are here ſacrificed.

As to their ſtairs, they are noble, ſtrong, and grand; but we cannot help obſerving, that eaſe and ſafety here give place to beauty and novelty: if any perſon, either ſober or intoxicated, makes a falſe ſtep, he is in great danger of breaking his bones, or falling into the water: of this there was an inſtance about two years ago; a perſon ſtumbled upon the ſteps, and had

it not been for a wooden partition that had been placed for preventing people's going down to the water, he had rolled to the bottom of all the ſixty ſteps, and perhaps had been drowned; however, he was greatly affrighted and bruiſed, and when got to the top of the ſtairs, owned the truth of this obſervation, which two gentlemen had made to him but a few minutes before.

'Tis ſubmitted to the impartial, whether *C*'s plan, ſo like that of Weſtminſter, did not deſerve the preference: it conſiſted of twice twenty ſteps only, with a flat in the middle going, of 20 feet ſquare; and if the centre of this bridge under conſideration had been of the ſame elevation as it is now, and had declined toward the land ten feet more than it does, twenty ſteps would have been ſaved on all ſides, the rain had run off better, and the ſafety of the people had been more certain: a conſideration, we hope, that may merit the future attention of the public.

*C.* alſo

*C.* alſo demonſtrated the neceſſity of piling each foundation below the piers, but in no caſe to remove the ſtratum of gravel that nature had provided; an error which the Weſtminſter ſurveyor had unfortunately fallen into, contrary to all the reaſon in the world, and the nature of things.

After the committee had aſked *C.* the proper queſtions, they cloſed the examination with this: "What money do you think ſufficient to defray the charges of building the bridge? and in what time may it be finiſhed?" "The charges," I anſwered, "will amount to one hundred thouſand pounds ſterling, and the time to finiſh it will be ten years."

Having retired with my drawings, I was but juſt got thro' the anti-chamber, when I was recalled. The then Lord Mayor very politely ſaid, "Will you be pleaſed to leave your drawing with the committee:" to which I anſwered, "With all my heart, you do me honour;" ſo left it,

it, and in a few days it was ſent back with thanks and politeneſs.

Beſides, *C.* never imagining the matter had been predetermined, executed another deſign, of nine ſegments of arches; the middle 120 feet diameter, the four on either ſide diminiſhing ten feet each.

But the principal idea in this drawing conſiſted in a clear demonſtration, that the whole balluſtrade and foot path was to be a ſegment of one flat circle from ſhore to ſhore; a thing not to be found in any author; not like the foot-walk of Weſtminſter-bridge, which ſeems to riſe and fall on every pier; and even that, though owing to the nature of the plan, might have been a little remedied if foreſeen in proper time.

The illuſtration of this flat arch-walk and balluſtrade will appear more clear, if we conſider the breadth of the river at Black-fryars to be 1100 feet, allowing this to be the baſe line, the extreme parts of which to terminate our flat arches, giving fourteen feet for the depth of water,

water, twenty feet for the vacuum of the great arch for the craft to paſs at high water, ſix feet for the thickneſs of the arch at centre, and ſeven feet for the balluſtrade and pedeſtal; the whole making 47 feet: the extremity being given, the flat circle on a large plain is eaſily deſcribed, whence the moulds to work by may be formed.

To carry this idea a little further, for ſpeculation only: Suppoſing the materials very good, and connected together as one ſolid body, and alſo allowing the abutments on the land not to give way in the leaſt, and the intermediate piers to have been either all ſtruck or removed, would that great flat arch give way? It certainly would: though good materials ſkilfully compacted will ſuſtain any weight that is adequate *.

We cannot quit this elegant ſtructure without obſerving, that the foundations are judiciouſly laid on piles well

* 'Tis from the infinite number of parts, of which our arch is compoſed, that this imperfection ariſes.

drove

drove in, and excellently diſpoſed; their horizontal tops are levelled to the clear bed of the river, on which the bottom of the great caiſſon reſts; and though the piers do not conſiſt all of ſolid ſtone like that of Weſtminſter, yet, if I miſtake not, the four or ſix firſt courſes are all ſolid, throughout, and all clamped and united with iron every way neceſſary; and where the whole is not of ſolid ſtone, yet they are ſo ingeniouſly united by courſes of Portland at proper diſtances, and theſe bound and ſecured every way with iron, and large dove-tails of Engliſh oak, and the interſtices filled up with the beſt lime and ſtone, that nothing but time can deſtroy them.

The arches are only nine in number, the fineſt and moſt beautiful perhaps in the world; their form is elliptical, which renders them more convenient for navigation than if any other ſhape; the centre arch is 100 feet diameter, and about 24 feet higher than the ſurface, even when the tide is at the full; the other arches diminiſh

diminiſh about five feet each toward the ſhores, but ſome of them are ſix inches ſmaller, if the copper plate be juſt.

The two Ionian columns, with their pilaſters and projecting cornices placed on the cut waters of each pier, are of exquiſite beauty and magnificence, taking from the ſtructure that heavineſs with which too much plainneſs and ruſticity are attended; for, beſides the novelty of the idea, ſuch erections, ſo excellently well accompliſhed, give a ſenſible pleaſure to every gentleman of taſte and genius.

Whoever projects for the benefit of the public, ought to be highly eſteemed: the tribute of applauſe paid to Sir *Chriſtopher Wren*, *Inigo Jones*, and *James Gibbs*, in the former century; to Mr. *Adams* and Mr. *Miln* in our own; bear teſtimony of this no leſs than the particular reſpect in which *Paladio*, *Vitruvius*, and *Scamoti* among the antients, not to mention the wiſeſt of kings, have ſhone for ages, and been decked with civic crowns of applauſe;

plauſe; their plans have diffuſed a general joy both to the rich and to the poor.

Beſides the reputation and eclat conveyed to a country from ſtately erections, very great profit is alſo derived, ſince multitudes come from every quarter to view what is ſtriking and majeſtic; and nothing is more certain, than that travellers who came from all places to view the magnificent and coſtly buildings erected by *Louis* XIV. have ſpent ten times more money than what all of them put together might be worth.

'Tis true, that tho' on the 9th of June, 1769, the hulk of a French privateer, coming up to be diſſected at Williſs's-wharf, joining the eaſt corner of Weſtminſter-bridge, ſtruck againſt one of theſe pillars with her prow, and fractured it about 8 or 9 feet above the baſe; yet it was reſtored ſo effectually in a few days, that now there is not the leaſt veſtige of a blow. Plain truths are ſometimes diſagreeable, but ſuch as may contribute to

public

public utility, ought to be fairly conſidered, and gratefully received.

If the hypotheſis be granted, as to the building of flat brick and terraſs arches; the following plan, 'tis hoped, will meet with no inſurmountable objections, as it regards principal houſes, arſenals and merchants warehouſes, *&c.* *&c.* not only in Great Britain and Ireland, but through the whole extent of the Britiſh empire; and lays down a method for rendering them proof againſt fire, and where neither rats nor mice will find ſhelter.

To effect this, timber muſt be excluded from all roofs, floors, and ſtaircaſes; and, if the proprietor pleaſes, iron doors and windows may be made with every ornament wherewith they are executed in wood; the richeſt decorations may be introduced in the cielings of the rooms of the principal apartments.

In the annexed drawing is the ſketch of a ſmall houſe, conſiſting of a kitchen,

parlour,

10
20 Feet

parlour, firſt floor, ſecond floor, and a garret: B, B, B, B, B. If this ſmall ſtructure can be executed with propriety, as ſeveral have been done in France, of a larger extent; no doubt any fabric, or range of buildings, of juſt dimenſions, may be effected with the ſame eaſe, provided there be money, good materials, and able workmen.

Firſt then, the ground being laid out to the ſatisfaction of the proprietor, let the foundation be properly dug and ſecured, by piling, planking, or arching, according to the nature of the ground, and as the neceſſity of the building may require; ſince 'tis evident, that if the foundation be weak, the ſtructure muſt fall.

All vaults and cellars below ground muſt be compoſed of good bricks, and the beſt quick lime, becauſe of the damps; and not of old ſtale rubbiſh, commonly uſed in the lower apartments.

*N. B.* All the principal exterior and interior walls of every building of con-

ſequence, muſt ſtand with their niches ſome months before you begin to ſet your flat arches, or floors; the goodneſs of the ſeaſon, and judgment of the ſurveyor, *&c.* will beſt determine this eſſential point. *

To deſcribe the principal flat arches of our cielings, let fall a perpendicular from the centre of the wideneſs of your room, which in this plan is 20 feet, and from that perpendicular point A, deſcribe your great flat circle, as A A; then take the height of the riſing of your arch, which is one fifth of the wideneſs of your room; being four feet, deſcribe an equilateral triangle, whoſe ſides are the ſame with the riſe; the lower points of this angle will deſcribe the flanks of your ellipſis, and form an agreeable cieling, at the interſection of the points A A; the ſmall

* *Ex. grat.* A great part of the inſide of the Duke of Grafton's new houſe on Hay-hill, London, fell; being built in a very rainy ſeaſon, and with too much precipitation, Auguſt and September, 1769. The damage would not been much minded, but ſeveral poor men loſt their lives.

riſe

riſe that naturally falls out there, through the hollowneſs of the elliptical flank, will be entirely obliterated by the moulding that goes round the room; and, whether it had any cornice or not, will look infinitely better than when the curvature is carried on with a regular ſweep, as appears in the ſection of A A, F F. By keeping to the ſame centre, the points of the triangle A, B, and C, form the thickneſs of your flat arch, or floor; which may be of 3, 4, 5, or 6 inches, as the nature of the apartments may require; all compoſed of the beſt bricks, one inch thick, and no more; one but half the length of the other, ten inches long by five, well and judiciouſly ſet with beſt tarras, or mortar; all flat, and firſt dipped in water, for the ſake of unity. But more of this hereafter.

The ſpace between the principal wall and the back of the principal arches at bottom muſt be filled up with dry rubble and tarras, to the height of 12 inches, or more; which will unite the arch and

wall together in ſuch a manner as effectually to prevent any lateral preſſure from affecting either, as deſcribed at each flank, B B. Upon this flank, and the back of the arch, as at P P, you are to ſet long thick bricks, back to back, 15 inches long, 10 inches broad, and 2 inches thick, united together with the beſt tarras; they muſt ſlope and dwindle away within two or three inches of your centre, or level of the floors; and for the thickneſs of the floors themſelves, thoſe ribs or partitions muſt be about three or four feet diſtant from each other, and the ſpaces between them filled up with very dry earth, that the cruſt of the arch may not be hurt by damps, but kept dry, and conſequently ſtrong and firm to carry any load that may be laid upon it; the dryer it is kept the better.

When theſe buttreſſes and flanks of our arches are well conſolidated, and dry, you may level your floors in the ruff, but that part of the work muſt be the laſt, either with bricks or good mortar.

What

What is obſerved on this flat arch of the parlour floor is ſufficient, and demonſtrates the rules of all the others, though the curvatures of the parlour cieling are the ſame with the firſt floor, ſecond, and third; and ten inches flatter than the kitchen, and uppermoſt arch or cieling, which bears the roof the ſame as the kitchen; the reaſons are plain and obvious, for ſtrength and utility; and when the materials are good, the taſte muſt determine the ſhape it is to be of.

'Tis obſervable, that in all uncommon buildings it is not poſſible to go on with them in the common way; the neceſſity of keeping them free from damps and rains muſt oblige us to carry up our principal extra and infra walls, with their niches, *&c.* as marked through all the ſtories, as at B, B, B, B, B; the niches on which all the arches take their riſe, the firſt brick ſet nearly upright, or almoſt perpendicular with your wall; all the reſt, throughout your whole arch,

flat; and well cemented with beſt tarras, with the fire or ſpirits in it.

In carrying up the principal extra walls, the centers which give ſhape to the cielings may be thrown over as you aſcend in the buildings, and will be of uſe and excellent purpoſe for both ends; but if our building is deſigned to be more than three ſtories, outſide ſhores will be found moſt reaſonable and ſafe, not only for erecting ſcaffolds, but for reſiſting all lateral preſſures whatſoever, eſpecially when 'tis ſettled, that our uppermoſt arch, on which our roof reſts, muſt be finiſhed firſt, and our extra and infra walls have ſtood ſome months, all well covered in, if needful, and the ſeaſon required it.

When the principal outſide walls have ſtood ſome months without any flaw, as alſo the inferior walls, and that the centres of the flat arches for the floors are all carried over, you muſt throw over your uppermoſt ſtory, the arch on which your roof principally depends; which, when

when done, will keep all the wooden centres of the lower ones dry through the ſeaſon, if it cannot be other ways avoided.

To do this, you muſt nearly follow the direction for cieling the kitchen; the brick buttreſſes of which run parallel with the floor, but in this they muſt ſlant with the ſlope of the roof.

The bricks that compoſe theſe buttreſſes ſhould be 15 inches long, 10 inches broad, an inch and a half thick, clapped back to back, with the beſt tarras, and firſt dipt in water, which expels the air, and by filling up the pores of the bricks with the tarras, renders the union inſeparable: theſe buttreſſes are ſet upon the flat arch all over the roof, about 12 inches diſtant from each other, and vacuums between each, ſo that windows may be pierced through the roof, whereever it is found neceſſary; the brick ſlates that cover the roof muſt be 20 inches long, 15 inches broad, and 3 quarters thick, ſo laid, that none of the joints may interſect each other; and that if any

of them were broken or cracked, the rain might not fall on the uppermoſt, nor penetrate through, but be prevented from deſcending to the lower arches: the ſummit of the roof muſt be covered with tiles, anſwering the angle, and the joints ſo placed as not to interſect thoſe of the others.

The roof, as you ſee in the ſection, riſes 8 feet 6 inches, which is little more than one third of the extent of the building, from one end to the other in breadth. A gallery in the middle, as at G, four feet broad, and five feet ſix inches high, formed in a Gothic arch, will be of ſingular uſe to enlighten the whole, and to walk under the roof; it will alſo be a ſupport to it, and will eaſe the centre of the flat arch, to which all bodies muſt gravitate until they are perfectly conſolidated; however, this can never be executed, if there be any chimney in the upper ſtory.

Our roof being covered in the proper ſeaſon, and it muſt, if poſſible, before

the froſt ſets in, ſince cold rends plaiſter, and is apt to deſtroy or chill every cement. If the Spring be gentle, let your centers be all finiſhed, and well turned, ſince theſe give the true ſhape to our arches: let the niches be perfectly cleared of every particle of dirt, or rubbiſh; you may begin to ſet the flanks of your arches upon the niches, your line being ſtretched exactly to the breadth of your bricks; you muſt carry on one courſe of bricks at a time all round the room; but one good workman may follow another, and ſo on till you riſe gradually, and cloſe the triple rows with one in the centre of your arch; in the finiſhing all, being well ſet in their uniting parts, with your tarras ſlack'd on the ſpot: you uſe it with the ſpirits and fire in it. This roof or cieling, ſo conſtructed, will, with the three, or at leaſt four thickneſſes of one inch thick brick, made in the whole only, if three bricks five inches and an half, *viz.* one inch and a half for the floor, three inches for the three bricks, and one inch for the

the tarras between the bricks, and the fine coat that finiſhes the cieling.

Many examples might be given of the ſtrength of theſe flat arches, when done by able workmen, and ſuch good materials as here recommended; nay, it is plain, the lateral preſſure muſt be entirely removed by the ſtrength and unity of the arches themſelves, nearly as much as if they were caſt off in braſs, or iron: if indeed they were ſubject to bending, or giving way, as joiſts of houſes do, in that light, the lateral preſſure might prevail through the whole, and ſenſibly affect the buttreſſes, and ſomewhat the principal walls themſelves.

It cannot be denied but both flat and acute arches have fallen; but the firſt never by puſhing out its flanks or pillars, but fall in a perpendicular direction, owing to the badneſs of the materials, the ſeaſon, or unſkilfulneſs of the workmen; the latter has often fallen by the weakneſs of the abutments, and the badneſs of the foundation, to which all bodies naturally

preſs,

preſs, in proportion to the acuteneſs of the angle of direction, like water which runs or ſtands on any ſurface, in proportion to the level or declivity of the plain on which it is thrown.

Though the antients formed all their roofs and arches in acute angles, even to 70 or 80 degrees, and not ſatisfied with that, erected abutments and buttreſſes behind each pier, to remain there as principals of their buildings, and to prevent any lateral preſſure; yet ſurely thoſe apprehenſions took their origin from the vaſt quantity of matter, or the thickneſs of the arches, with which they loaded all their piers.

What has been obſerved before in the conſtruction of good houſes for habitations, both of rich and poor, and the ſafety of their lives and properties, will, we hope, leave no manner of objection againſt the king's and merchants ware-houſes, rope-houſes and arſenals, which neither red-hot balls, nor cold, nor fire, either accidental or deſigned, can affect or ruin, but the goods in one ſingle apartment only.

But

But it perhaps may be ſaid, that great warehouſes and arſenals are too wide for flat arched roofs and floors. This can be no material objection, ſince the principal walls muſt be proportionably thick to the width; if our houſes be forty feet wide within the walls, then one-eighth of that being five feet, is ſufficient for the riſe of your cielings, from the nich in the principal wall: which walls muſt be proportioned to the width likewiſe, viz. three quarters of an inch to each twelve inches of the within extent, will give the principal walls thirty inches for their thickneſs.

Doors of iron made in a light and proper manner, and pillars of the ſame, where truly neceſſary, and where partitions are not, or perhaps may not be convenient for room, will be of excellent uſe; and thoſe pillars ranging throughout all the new houſes at proper diſtances, and perpendicularly to one another. Stairs may be cut through our arches wherever moſt convenient, with the greateſt ſafety; but when they interfere with the apartments, their

planes

planes may, and ought to be, extra of the planes of the principal houſe within, and illuminated from the ſky; as they are in almoſt all the principal houſes both in town and country.

As the goodneſs of materials is a moſt eſſential conſideration in all good ſuperſtructures intended for duration, and abſolutely neceſſary in the conſtruction of all flat arches for roofs, floors, or cielings; the beſt tarras, if not found in England, muſt be had, if from France.

What a ſurpriſing phænomenon would it be, if our coaſts oppoſite to thoſe of France (which produce infinite quantities of the beſt tarras, viz. Picardy, Normandy, Bretagne, and the famous Lahagne Bar, which is oppoſite to Chicheſter in England; alſo Bourdeaux, Bayonne, and Rouſillon, all principal places for the fineſt tarras) did not, if ſkilfully managed, produce as good tarras as any they have, and reaſon and nature ſeem to coincide with our opinion: that little narrow branch of the great ocean which divides the two kingdoms, ſeems only

only to have happened by a ſhock of an earthquake, or perhaps by the great flood in Noah's days. The earth then and ſince has, in her outward form and figure, in many countries, changed her countenance ſo much, that the moſt intelligent geographers are left greatly in the dark. But as to the eſſential ſtamina, or principal matter, of which our earth was firſt compoſed (by the Almighty fiat) we cannot admit a doubt of its being the ſame as in the beginning, without admitting the greateſt contradiction to all the reaſon and philoſophy in the world.

And indeed we cannot help thinking, that if a plan was properly drawn for improving ſome of our Engliſh rock into tarras, and laid before his Majeſty—we have the beſt reaſon to believe it would meet with proper encouragement; eſpecially when it is duly conſidered how many ſtorehouſes and noblemen and gentlemen's fine palaces have been deſtroyed within our memories, and within theſe few years, by fatal fires both at home and abroad; which, had they been erected

according to the plans we have ſo ſtrenuouſly recommended, had ſaved many lives and millions of money.

As it is an undoubted truth, that the beſt ſcheme which ever was formed, never took but by very ſlow degrees, it is a queſtion if the ſcheme we have recommended ever does, in this or the ſucceeding age. Such numerous and invincible arguments are againſt it—Carpenters muſt turn maſons and bricklayers, or ſtarve; but the time our houſes would laſt, muſt ſtarve the carpenters quite. But notwithſtanding all that can be ſaid againſt the ſcheme, reaſon and the ſafety of mankind will ſtill have force enough to juſtify our pains, eſpecially in recommending the immediate practice of it, in all public and great warehouſes and arſenals: ſuch can meet with no oppoſition either in theory or practice, but want only fit opportunities, money, and materials.

It muſt be confeſſed, that ſince the great fire of London, 1666, many excellent laws have been enacted for the public ſafety, in order to prevent the fatal conſequences of deſtruc-

deſtructive fires. Theſe ſtatutes are principally directed to proprietors and builders of houſes for their conduct, and to prevent erections of wood, and uſing ſuch a quantity of that combuſtible matter in their buildings as has been, at preſent is, and will be till prevented, by greatly curtailing ſuch vaſt quantities of fiery turpentine, or timber, as are laid in every new erection. Our intention is to ſhew, or endeavour to illuſtrate, what little regard is paid to thoſe ſalutary laws, even by the greateſt bricklayers and carpenters in London; and this we propoſe to do by examples from new erections of their own; beſides quotations from the principal ſtatutes relative to this ſubject: with ſome obſervations and improvements on ambiguous words, which the cunning and ingenious well-fee'd counſellors never fail to bring, with all their oratory, when the builders are attacked on the ſtatutes.

The firſt example of an illegal houſe we ſhall take notice of, is that pretty white one, upon an entire new conſtruction, on the higheſt ground in the Green-Park, in the

eye

eye of the palaces! which has been in agitation between three and four years. This famous building (except ſix feet immediately above the ground, which is bricks and ſtone, and the centrical parts which front Lord *Cholmondeley*'s houſe to the north) are all wood covered over with plaiſter, contrary to the ſtatutes relative to this ſubject, which will more fully appear by and by in our quotations, particularly that of Anno Reg. VI. &c.

Before we begin our literal quotations from the ſtatutes, we ſhall give another example of one of the fineſt rooms, perhaps, in St. James's pariſh, which is connected with, and adjoining to the back of the great aſſembly-room, in King's-ſtreet. Their doors are pierced through the great brick wall of the latter, for convenieney to both. This elegant room was finiſhed December 1767; and being now out of all danger of information, either to hurt or affect it in the leaſt degree, or thoſe eminent workmen who built it*; we ſhall, for the public good,

* No action can legally be brought, but within

good, and thoſe who may be tempted hereafter to act ſo contrary to all common honeſty, but alſo in contradiction to all the ſtatutes on the ſubject of building, give a little deſcription of it, and the unjuſtifiable means they uſed to accompliſh that end, viz. of building this pretty place for the moſt laudable purpoſes to be ſure——

A ſtable and hayloft belonging to a neutral perſon * (not near ſo great a man as any of theſe builders, nor even the proprietor of the great room † himſelf) ſtanding and joining to this proprietor's ſtable, only divided by a party wall, in common to both ſtables; he, in conjunction with his eminent builders (and contrary to all the warning given them of their illegal proceedings) took away this party wall, incroached eight or ten inches on the foun-

ſix months after the facts, or finiſhing of any illegal erection. Act of Geo. III. Anno 6. p. 657.

* Had a leaſe of the premiſes at that time (1763) of 13 years unexpired.

† Built 3 years before, entirely by ſubſcription.

dation

dation of this neighbour's ſtable, from front to rear; by which they enlarged their kitchen, and built a new wall in its place. This new wall they only carried up about 20 feet high, until it came equal with their joiſts and flooring, or parallel with the floor of their great room, which fronts King's-ſtreet. Not only here is the encroachment unjuſtifiable, but they ſhould have carried this party wall upright, through all the ſtories, as the ſtatute directs, viz. * That they paid no regard to in the leaſt; but on the level of it, when it came parallel with the floor of their great room, they laid four great girders and twenty-one ſmall joiſts both on the top of this wall, and on the upper ſtory, all hanging over the wall between four and five feet, and over the roof of their neighbours ſtable and hayloſts. On the extremity of theſe illegal girders and joiſts, they made the largeſt wooden wall, perhaps, in London, built ſince the great conflagration, and covered it in the fineſt manner plaiſter

* Act Char. II. chap. xvii. & xix. and alſo by an Act of Q. Ann. anno 6.

could do, in direct contradiction to the true ſpirit of every act on the ſubject, particularly thoſe of Geo. III. chap. xxxvii. page 652. and that of Geo. III. anno 4.

Theſe recent inſtances are ſufficient to ſhew the little regard the principal builders in this great metropolis pay to the eſtabliſhed laws of their country, there being but few ſtreets in it, of any conſequence, where there is not illegal bows or unwarrantable projections. If a maggoty landlord or tenant takes it in his head that he is not ſufficiently ſeen from the window, eſpecially when his head is juſt finiſhed by a French hair-dreſſer, the beſt carpenter and bricklayer that he knows are directly ſent for; down comes the front of his houſe in a mighty hurry, and bow-windows are erected in prodigious haſte, without paying the leaſt regard either to the complaints or damage of his neighbours, though he often affronts them all.

We ſhall now, for the entertainment of our curious readers, give a few intereſting quotations from the ſtatutes themſelves, particularly

ticularly that of Q. Ann. anno 6. chap. 31. entitled, *An Act for the better preventing of miſchiefs that may happen by fire.*

" Whereas many fires have lately broke " out in ſeveral places, in and about the " city and liberty of Weſtminſter, and " other pariſhes and places comprized with- " in the weekly bills of mortality, and " many houſes have frequently been burnt " and conſumed, before ſuch fires could be " extinguiſhed, to the impoveriſhing and " utter ruin of many of her majeſty's ſub- " jects; the rage and violence whereof " might have been in a great part prevent- " ed, if a ſufficient quantity of water had " been provided in the pipes lying in the " ſtreets, and if party walls of brick had " been built between one houſe and ano- " ther, from the foundation to the top *, " and leſs timber in the fronts of the houſes:

* The great wooden plaiſter-wall of the new room behind the great aſſembly-room in King-ſtreet, St. James's, of which we have taken ſome notice before, falls under this cenſure; for though it does not join to any houſe, yet it is infinitely worſe, and more

 liable

" houſes †: For preventing the like miſ-
" chiefs for the future, be it enacted by
" the Queen's moſt excellent Majeſty,
" by and with the advice and conſent of the
" lords ſpiritual and temporal in the pre-
" ſent parliament aſſembled, and by the
" authority of the ſame, that from and
" after the 25th day of March, which ſhall
" be in the year of our Lord one thouſand
" ſeven hundred and eight, *&c.*"

The third paragraph of the ſame act, is as follows; " And be it further enacted, by " the authority aforeſaid, that from and " after the firſt day of May, which ſhall be " in the year of our Lord one thouſand " ſeven hundred and eight, all and every " houſe and houſes which ſhall be erected

liable to cenſure; being expoſed not only to all external accidents from haylofts in that yard, but hangs over between 4 and 5 feet, contrary to the true ſpirit of every act relative to the ſubject. Theſe haylofts and ſtables at that time belonged to C. C.

† This ſame illegal plaiſtered wall, and the eaſt end, which is moſtly wood plaiſtered, falls under this predicament alſo.

" and built, either upon old or new foun-
" dations, in any place or places in and
" about the city of London and Weſtmin-
" ſter, or other pariſhes or precincts, com-
" prized within the weekly bills of morta-
" lity, ſhall have party walls between houſe
" and houſe, wholly of brick or ſtone, and
" of two bricks in the cellar and ground
" ſtories, at leaſt, and thirteen inches thick
" upwards from the foundation, quite
" through all the ſtories of each houſe, and
" thirteen inches above the roof *. And
" that no modilion, corniſh, timber, or
" wood under the eaves, ſhall hereafter be
" made or ſuffered in any ſuch new houſe
" or houſes; but that all fronts and rear-
" walls of every houſe or houſes, ſhall be
" built of brick or ſtone †, to be carried
" two

* The party walls of all houſes are improved by the acts of Geo. III. anno 4 & 6. from 13 inches at bottom to two bricks and a half thick, makes 22 inches, beſides the mortar; and 18 inches above the roof or gutter, which parapet muſt be covered with ſtone or good brick.

† Here again the plaiſter wall is condemned; and this,

" two feet and a half high above the garret
" floor, and covered with ſtone or brick * :
" and if any new houſe or houſes, ſhall,
" from and after the ſaid firſt day of May,
" be erected and built within the places
" aforeſaid, contrary to the true intent and
" meaning of this act, that then the owner
" of every ſuch houſe, and head builder,
" or workmen, who undertakes ſuch build-
" ing or work, ſhall each of them forfeit
" and pay for every ſuch default, the ſum
" of fifty pounds, to be equally divided:
" one moiety to the informer, and the other
" moiety to the poor of the pariſh, wherein
" ſuch building ſhall be erected; and to be
" levied, by warrant, under the hands and
" ſeals of two or more of her Majeſty's
" juſtices of the peace within the place

with the foregoing anecdotes, involves the fine white houſe in the Green Park, under the ſame predicament.

* Almoſt all the common houſes are capp'd with large deal yellow boards of two or three inches thick, and painted like ſtone capping, and divided like the joints of the ſtone.

" where

" where ſuch buildings ſhall be erected, or " where ſuch workmen ſhall inhabit, by " diſtreſs and ſale of the offenders goods, " upon the conviction on oath, or upon the " view of one or more ſuch juſtices of the " peace *, rendering the overplus to the " owners (if any be); and for want of " ſuch diſtreſs, the offender ſhall be impri- " ſoned by warrant from the ſaid two juſ- " tices, who are hereby impowered to iſſue " ſuch warrant until payment as aforeſaid. " And the ſhare of ſuch forfeitures appoint- " ed to go to the poor, as aforeſaid, to be " paid into the hands of the churchwardens " of ſuch reſpective pariſh, where ſuch of- " fence ſhall be committed, who are to " give a receipt for the ſame; and to be " charged therewith, and accountable for " the ſame, in like manner as the other " monies which they ſhall receive for the " uſe of ſuch pariſh."

* Several juſtices of the peace were called upon to view the illegal erection in Roſe and Crown yard, who promiſed to do as they are bound, under ſevere penalties, but never were ſo juſt as to obey either.

*Anno Regni* 4° *Georgii III. Regis*, page 262, is as follows;

" And whereas it would tend greatly to " prevent the fatal conſequences of fire " ſpreading and communicating to adjoin- " ing houſes, within the ſaid city, pariſhes, " and precincts, and other the limits afore- " ſaid, if party walls between houſe and " houſe within the ſame, were to be made " of greater thickneſs than is preſcribed by " the act paſſed in the ſeventh year of the " reign of her late Majeſty Queen Anne, " intitled, *An Act for making more effectual* " *an Act made in the Sixth Year of her ſaid* " *Majeſty's Reign, for the better preventing* " *Miſchiefs that may happen by fire.*

" And if no timber, except the timbers " of the girders, binding joiſts, and the " templets under the ſame were laid into " party walls; and if no timbers of the " roof were laid into the party walls (ex- " cept the purlins and kirb thereof): and " if the ends of girders and binding-joiſts " lying within the ſaid party-walls, did

" not

" not exceed one foot; and if none of the
" ends of girders or binding-joiſts in adjoin-
" ing houſes, meet, or were laid oppoſite
" to one another, and the ſides thereof
" were laid at leaſt fourteen inches diſtant
" from each other; and if there ſhould be
" nine inches at leaſt of ſolid brick-work
" left, or between the ends of all lintels,
" wall-plates, or bend timbers, which may
" or ſhall be laid, in or upon the walls of
" the fore and back fronts of all houſes
" which ſhall adjoin to each other.

" Be it therefore enacted, by the autho-
" rity aforeſaid, That all party walls which,
" from and after the expiration of three
" calendar months, next after the paſſing
" of this act, ſhall be erected or built with-
" in the ſaid city or liberty of Weſtminſter,
" and the pariſhes, precincts, and limits
" thereof, as aforeſaid, ſhall be two bricks
" and a half thick in the cellars at leaſt,
" and two bricks thick upwards, to the
" garret floors; and from thence one brick
" and a half thick, or eighteen inches at
" leaſt above the roof or gutters which ad-

" join

" join to ſuch party walls; and that the
" ſame ſhall be built of ſtone, or of good
" ſound burnt bricks, and no other.

" And be it further enacted by the au-
" thority aforeſaid, that from and after the
" expiration of the ſaid three calendar
" months, no timbers, except the timbers
" of the girders, binding-joiſts, or templets
" under the ſame, ſhall be laid in any party
" walls erected or built, or to be erected
" or built within the ſaid city or liberty of
" Weſtminſter, and the pariſhes, precincts,
" and liberties as aforeſaid; and that no
" timber of the roof be laid in ſuch party
" walls (except the purlins or kirb there-
" of) and that the ends of all girders and
" binding joiſts lying within ſuch party
" walls, ſhall not exceed nine inches; and
" that none of the ends of the girders or
" binding joiſts in adjoining houſes, ſhall
" meet or be laid oppoſite to each other:
" and that the ſides of each ſhall be at leaſt
" fourteen inches diſtant from each other;
" and that there ſhall be nine inches at leaſt
" of ſolid brick-work left at, or between

" the

" the end, of all lintels, wall-plates, and " bound timbers, which may or ſhall be " laid in or upon the walls of the fore and " back fronts of all houſes which ſhall ad- " join to each other.

" And if any head-builder, maſter brick- " layer or workman, ſhall erect or build, or " cauſe to be erected or built, any party- " wall within the ſaid city and liberty of " Weſtminſter, and the pariſhes, precincts, " and limits thereof, as aforeſaid, contrary " to the directions, true intent and mean- " ing of this act; or ſhall uſe in the build- " ing thereof any bricks other than good " ſound burnt bricks, or ſhall lay any tim- " ber in any party-wall * erected or built, " or which ſhall be erected or built within " the ſaid city or liberty of Weſtminſter, " contrary to the directions, true intent and

* All the great timbers, girders, and joiſts, with thouſands of feet of quarters, and a hundred thouſand feet of lath, contained in the great ſouth plaiſter wall of the new fine room behind the great aſſembly-room in King's-ſtreet, St. James's, are condemned by this ſtatute, though the head carpenter of this erection had a principal hand in this improved act.

" meaning

" meaning of this act, then ſuch head-
" builder, maſter bricklayer, or workman,
" ſhall, for every ſuch offence, forfeit and
" pay the ſum of fifty pounds: one half to
" the poor, and the other to the informer,
" upon conviction, and the overplus (if any
" be) to the defendant," as in the former quotation of the 8th of Queen *Anne*.

*Anno Reg.* 4° *Geo. III. p.* 265.

" And be it further enacted by the au-
" thority aforeſaid, that every maſter buil-
" der who ſhall, after the firſt day of July,
" one thouſand ſeven hundred and ſixty-
" four, erect or build any houſe within
" the limits abovementioned, ſhall, within
" fourteen days after the ſame is covered in,
" cauſe the ſame to be ſurveyed by one or
" more ſurveyor or ſurveyors; and ſuch ſur-
" veyor or ſurveyors ſhall make oath before
" one of his Majeſty's juſtices of the peace
" for the ſaid county of Middleſex, or city
" of Weſtminſter (which oath ſuch juſtice
" is hereby impowered and required to ad-
" miniſter) that the ſame hath been, to the

" beſt

" beſt of their judgment and belief, built " and erected agreeable to the ſeveral di- " rections in this act contained; which affi- " davit ſhall be filed with the clerk of the " peace for the ſaid county of Middleſex, " within ten days after the making thereof; " and the ſaid clerk of the peace ſhall have " for his fee and trouble therein, one ſhil- " ling, and no more."

N. B. The two fine houſes in queſtion were never ſworn to, or elſe perjury had been added to the tranſgreſſing of the laws.

" And if any maſter builder ſhall make " default in the premiſes, by neglecting to " cauſe ſuch ſurvey to be made, and ſuch " affidavit to be made and filed as aforeſaid, " ſuch maſter-builder ſhall, for every ſuch " neglect and default, forfeit fifty pounds, " to be recovered and applied in the ſame " manner as any penalties and forfeitures " are by this act directed to be recovered " and applied.

" And be it further enacted, by the au-

" thority

" thority aforeſaid, that the pariſhioners " and inhabitants of the pariſh, liberty, or " precinct, where any offence againſt this " act ſhall be committed (except perſons " receiving alms) ſhall be admitted and al- " lowed witneſſes, notwithſtanding his, her, " or their being a pariſhioner or pariſhioners, " inhabitant or inhabitants, in ſuch pariſh, " liberty or precinct."

The many excellent improvements made on the ſtatutes for preventing the ſpreading of fires, ſince the great one of London, 1666, cannot be too much admired; more eſpecially thoſe, from which the foregoing abſtracts are taken: we ſhall add but a few more, which are emendations on all the former, as it is written in an act of our preſent Sovereign, in the ſixth year of his reign, chap. xxxvii. p. 655. viz.

" And be it further enacted, by the au- " thority aforeſaid, that if any head-builder " or maſter-bricklayer, ſhall, from and " after the firſt day of June, one thouſand " ſeven hundred and ſixty-ſix, erect or build " any houſe or houſes, within the ſaid city

" or

" or liberty of Weſtminſter, or cauſe any
" houſe to be erected and built there, with-
" in any of the pariſhes, precincts, or limits
" as aforeſaid, contrary to the direction of
" the ſaid recited act, or of this preſent act,
" then every ſuch head-builder or maſter-
" bricklayer ſhall not only pay the penal-
" ties whereof he or they ſhall be con-
" victed, but alſo ſhall, within the ſpace of
" ſix months next after his or their being
" convicted of ſuch offence, in manner by
" the ſame recited act preſcribed, make
" good all ſuch defects and irregularities
" whereof he or they ſhall have been ſo
" convicted, and render the building of
" ſuch houſe or houſes conformable to the
" directions of the ſaid recited act. And
" in caſe ſuch head-builder or maſter-
" bricklayer ſhall not, within ſix months
" after ſuch conviction, have made good
" ſuch defects and irregularities, and ren-
" dered the building of ſuch houſe or
" houſes conformable to the directions of
" the ſaid recited act, or of this preſent act,
" then every ſuch head-builder, maſter-

" bricklayer, or workman, ſhall forfeit the
" further ſum of fifty pounds, to be applied
" as aforeſaid, and to be likewiſe levied and
" recovered in manner as by the ſaid recited
" act is directed. And ſo *toties quoties* for
" every ſix months that ſuch defects and ir-
" regularities ſhall continue, and ſuch houſe
" or houſes remain, built otherwiſe than
" conformable to the directions of the ſaid
" recited act, or of this preſent act.

In page 657, it is ordered,

" And be it further enacted, by the au-
" thority aforeſaid, that if any action ſhall
" be brought, or ſuit commenced, againſt
" any perſon or perſons, for any thing done
" in purſuance of the ſaid recited act of the
" fourth year of his preſent Majeſty, or
" of this act, ſuch action or ſuit ſhall be
" laid or brought within ſix months next
" after the facts done, and not afterwards;
" and ſhall be laid or brought in the county
" or place where the fact was committed,
" and not elſewhere: and the defendant
" or defendants in ſuch action, may plead
" the general iſſue, and give this act and

" the

" the ſpecial matter in evidence at any " trial to be had thereupon, and that the " ſame was done in purſuance and by the " authority of this act. And if the ſame " ſhall appear to have been ſo done, and if " any action or ſuit ſhall not be brought " within the time before limited, or ſhall " be brought in any other county or place " than as aforeſaid, then the jury ſhall find " for the defendant or defendants: or if the " plaintiff or plaintiffs ſhall become non- " ſuited, and ſuffer diſcontinuance of his or " their action or actions, or if a verdict ſhall " paſs againſt the plaintiff or plaintiffs, " the ſaid defendant or defendants ſhall " have triple coſts; and ſhall have ſuch re- " medy for recovering the ſame, as any de- " fendant or defendants hath or have for " coſts in any other caſe by law.

" And it is hereby further enacted, that " this act ſhall be deemed and taken to be " a public act; and ſhall be judicially taken " notice of as ſuch, by all judges, juſtices, " and all other perſons whatſoever, without " ſpecially pleading the ſame." End of the act of 6 Geo. III.

It is obſervable that almoſt all the new projecting bow-windows through this metropolis, are erected with wood plaiſtered over, contradictory to all the laws on the ſubject of building for preventing the ſpreading of fires; and not only ſo, but all the window frames are ſet nearly flush with the fronts of their plaiſtered walls, and on the joiſts or girders projecting four or five feet beyond the main front of the houſe; and theſe joiſts parallel with one another, occupy a double office both within and without the houſe. *Vide the laſt paragraph of the Act of the 7th of Q. Anne.*

" Be it enacted by the authority aforeſaid, " that from and after the firſt day of June, " one thouſand ſeven hundred and nine, no " door frame, or frame of wood to be uſed " in any houſe or building which ſhall be " erected on either old or new foundations " within the aforeſaid city and liberty of " Weſtminſter, or the liberties thereof, ſhall " be ſet nearer the outſide of the wall than " four inches." Three months impriſonment is annexed to the tranſgreſſion of this ſtatute without bail or mainprize.

A ſingle

A ſingle obſervation more or two on this intereſting ſubject, principally addreſſed to the Great, both in town and country, who have numerous families.

As it is even in idea terrible, that ſo many people ſhould be permitted to ſleep in the night all at the ſame time in one houſe, without one or more awake, to be guardians (under Providence) of the reſt; as is practiſed on ſhipboard at ſea by every captain or maſter, unleſs he be a fool or an idiot *; how much it would contribute to the eaſe, happineſs, and advantage of the whole family, eſpecially the lord and maſter of it, if one or two of his moſt vigilant and truſty ſervants were appointed for that end; and had maſter-keys, ſuch as his lord or 'ſquire were pleaſed to truſt him with, by which, both night and day, that ſervant might examine every apartment of the houſe or

* It is not in the leaſt to be doubted, but that many ſhips, with all their crews, &c. are utterly loſt by intemperance and bad watchmen. The firſt renders good ſailors no better than fools; and if you bray a fool in a mortar, his folly will ſtill be the ſame.

houſes, within and without doors, on all occaſions whatever, hardly any ſeaſons excepted; but moſt of all when any workmen are about, or more particularly working in the the houſe. But above every other conſideration imaginable, let this principally take root, and be deeply engraved in the faithful memories of our great people, that theſe precautions be for ever put in practice at all times and ſeaſons, both nights and days, holydays * and ſabbaths not excepted——

* Early in the morning of the 27th of July, 1770, in Portſmouth dock-yard many fatal fires broke out in ſeveral places among the maſts, ropes, flax, pitch, and other warehouſes, which raged with irreſiſtable fury for ſix or eight hours, the tide being at low ebb, and the yard empty of the men; ſix or ſeven hundred of them being gone to a fair eight miles off. This they call a holiday. The damage is computed at the ſmalleſt rate at fifty thouſand pounds.

N. B. Such another ſcene was exhibited on this ſame day of the year in this very dock, about ten years ago. *O publiſh it not in Gath! Ah ſhame to men!* Milt.

It is a lamentable truth that many watchmen, both in church and ſtate, are well paid, though they do little or nothing but mind their own ſecular buſineſs, inſtead of their flocks. *Mait.*

when

when the carpenters and painters are juſt going away.

If our own particular ſervants can but be relied on, even when they have particular directions for watching night and day over both men and their operations, how little the latter ought to be depended upon who rejoice in miſchief of the moſt deſtructive kind, is open and apparent to every intelligent mind.

It is alſo moſt ſeriouſly recommended to theſe faithful inſpectors or guardians of the night, that in every room they enter, they examine, with the ſtricteſt attention, every fire-place and its chimney and funnel, not only by the eye, but particularly by the ſmell.

Had theſe or ſome ſuch like precautions been put in practice fifty years ago, by the opulent people of theſe nations, millions had been ſaved, and likewiſe many lives. Beſides rendering inſurance offices of little uſe, and enabling the maſter of the family amply to reward his faithful watchmen.

*Vive vale ſi quid noviſti rectius iſtis,*
*Candidus imperti, ſi non his utere mecum.*

HOR.

On Monday morning the 24th of September, 1770, the back apartments of Sir Sampſon Gideon's houſe were ſet on fire, (whoſe main large front faces St. James's ſquare, the corner of York-ſtreet) whereby ſeveral elegant rooms were all burnt down. This fire began in a chimney, by means of a blowing ſtove, which had ſet fire to ſome ſoot lying in a hole, or at the end and vacuum of ſome timber carried too near the flue; a practice too frequently uſed by diſhoneſt and unfaithful carpenters, who take delight in ſuch dreadful machinations as fatal fires. One of Sir Sampſon's ſervants told me he lay in the room that night where the fire begun, and was almoſt ſtifled before he could get out (which was about three in the morning) and that eleven more of the ſervants had ſlept in the houſe the ſame night. The painters had juſt finiſhed their work, and been extremely buſy all the preceding day (though the ſabbath).———Fires had been kept in the chimnies of many of the apartments ſeveral weeks before, though embraſures

are

are infinitely ſafer, and better for diſcharging the ſmell of the paint. No precautions are adequate to ignorance and careleſneſs to be ſure; for had the laſt obſervation in this ſmall treatiſe (addreſſed principally to the Great) been obſerved, and but one of the dozen ſervants who ſlept in the houſe that night had been ordered to watch, or rather to walk from room to room, and carefully obſerve every flue and chimney in the beſt manner by but two of his ſenſes, ſmelling and touching *, this misfortune, and the great inconvenience to the maſter and family, had been prevented.

What has been ſaid on the ſubject of building in general, and on this moſt intereſting one in particular, building houſes that are not capable of being deſtroyed by fire, &c.; the extracts taken from the principal laws themſelves relative to building, and preventing the extention of fatal fires; for directing brick-

* By firing a piſtol, (or more, if need be) loaded with powder only, up any chimney that is on fire, it will preſently, by the exploſion, extinguiſh or bring down all the ſoot, and ſave a deal of trouble and confuſion.

layers and carpenters in their operations, the obſervations made on their frauds and illegal practices; their ignorant and careleſs laying timbers too near funnels; their too frequent encroachments on neighbouring premiſes, &c. &c.; and our anecdotes on ſome famous erections, being collateral ſubjects, will, by the publication, we humbly hope, be of ſome uſe to the public, particularly the ingenious: to others, who care not for improvement, deſpiſe inſtruction, and abhor correction, we pray they may not eſcape without partaking ſome of the fruits of their labours, and be made ſenſible of the meaning of thoſe laws which they have ſo often, ſo audaciouſly, ſlyly, and wantonly violated.

We now come to the ſecond propoſition, which is to point out the moſt effectual methods, by which new chimnies in all good houſes may be ſo erected, as to draw well, and not prove ſmoky ones.

And as this moſt deſirable object depends on true philoſophical principles, matter and motion, we cannot admit a doubt, had

any of the eminent philoſophers, a Bacon, a Newton, or a M^c^Laurin, entered upon it, or truly conſidered the infinite advantage ſuch a ſubject, well diſplayed, would have contributed to the health and ſpirits of the great and opulent, they would have left ſuch directions, if properly purſued, that hardly a nobleman or gentleman's houſe in Great Britain would be deemed an unwholeſome or ſmoky one.

And, as the intentions of the author of this eſſay are principally meant for the public ſafety, and to inſpire ſome able hands to proſecute ſubjects of ſuch importance, hitherto ſo ſurpriſingly neglected or overlooked; if ever he is ſo fortunate as to ſee any fine genius proſecute them, the greater part of his intentions will be completed, and he will rejoice in the little pains, at leiſure hours, he has beſtowed in breaking the way for thoſe who are bleſs'd with time and excellent abilities.

It muſt be confeſſed, the ancients had many excellent notions on moſt ſubjects; and in their buildings endeavoured to ſhun the

greater

greater inconveniencies: for many of the funnels of their chimnies yet remaining, are thirty inches deep, and moſt unaccountably wide from right to left, and moſtly placed in the corners of all their houſes. To avoid a ſmoky one, they ſeem to have ſacrificed all ſymmetry and proportion; and when they placed their chimnies in the center of their beſt rooms, they projected them ſo far within the rooms, as ſeems an undoubted proof they could not help believing that deep funnels were abſolutely neceſſary for preventing a ſmoky houſe.

The moderns ſeem to have run into the other extream; and for the ſake of good room, order, and regularity in their apartments, give their chimnies ſo little draught, that there is ſo ſcanty a ſpace from breaſt to back, of about 12, 14, 16 or 18 inches at moſt, that it is hardly poſſible for few or any of them but muſt prove, as they do, ſmoky ones.

This is plain, without contradiction, by the numbers of earthen pots ſet on the tops of almoſt all the new chimnies which have been

been built for theſe 30 or 50 years backwards *.

To avoid extremes being the ſafeſt way on every ſubject, the true medium or method whereby chimnies may be ſo built as neither to ſpoil the rooms by their ſizes, nor prove ſmoky ones, is our chief intention. Neither is it more ſurpriſing the ſmoke proves ſo reluctant to aſcend the funnels of the chimnies built ſo unreaſonably ſhallow as the preſent mode is, than to ſee a guinea drop to the bottom of the exhauſted receiver with the ſame velocity as a feather; becauſe all bodies, in proportion to their denſity or weight, require a greater force to paſs through the medium of air when aſcending, than deſcending. How unreaſonable is it to expect, in rooms ſo unaccountably cloſe, where the air is almoſt entirely ſhut out, as in moſt of our modern great

* Witneſs the Admiralty, below Charing-croſs, where ſuch additions of various kinds are built on the old chimney tops, as are to be found no where elſe; all occaſioned by the ſhallowneſs of their funnels below, and narrowneſs at top. And it is a queſtion ſtill, whether they have mended their going to this hour.

houſes,

houſes, that the ſmoke will ever reverberate, when it has ſo little or no impelling power to force it up the funnels.

This ſeems to want but little illuſtration, as every part of nature proves it: the flowing of the tide ſtops and repulſes the currents of the rivers, in proportion to its ſuperior ſtrength; and when that loſes itſelf, the natural currents of the rivers take place again.

In the ſection you ſee the ſize of the modern chimnies in front, but all the funnels are upon a new plan. The old plans being found, by long experience, almoſt all defective.

Let therefore the funnels widen as they aſcend, eſpecially from right to left, and be at leaſt 20 or 22 inches depth; throw arches over from the front of the inſide of your chimney, to the back, and carry the inſides up ſlanting, filling up the vacuums as you go up, to prevent the ſoot from reſting on any ſquare or flat whatever: our depth being aſcertained to 20 inches at leaſt, the width from right to left need be no more

than

than 12 or 14 inches at moſt, as you ſee demonſtrated in the chimnies of our parlours and firſt floors Z Z.

Three funnels are drawn in the chimney of the kitchen *, and intended to be arched as the others. The ſmoother the inſides are, the better; for all roughneſs retards and hinders the aſcending ſmoke, and renders them almoſt impoſſible to be kept clean, which is abſolutely neceſſary to prevent them from ſmoking.

And if gentlemen of diſtinction would cauſe all the funnels of their chimnies to be built of ſolid ſtone, the thing would certainly be done to the purpoſe.

To prevent the ſmoke of one chimney being blown down another (a very common caſe) where there is no fire, let the tops of all your new chimnies be carried eighteen inches above the ſtone capping or cornice,

* This idea we do not inſiſt upon; but knowing that ſo many kitchen chimnies are very ſmoky ones, by reaſon of their width below; that width divided into three, and falling into the main funnel, may prove like three bellows in place of one, and be of great ſervice.

ſeparat-

ſeparated from one another, and finiſhed all ſquare, to prevent the whiſtling when the wind blows hard. Theſe ſquare tops, tho' they occupy more ſpace, muſt widen towards the top, as the ſlant from bottom to top of our plan in the ſection directed as at O O O O O.

And let all builders ſtrictly obſerve to ſet their bricks or ſtone with the beſt lime or tarras with the ſpirit and fire in it; for if the air penetrate from without or within, and communicate with one another, that chimney or chimnies can never go well.

For a further illuſtration of our hypotheſis or plan; as all ſmoke is water rarified by the force of fire, they being originally one, may juſtly be compared in their operations to one another. For example: When a powerful body of water is let out from any height, with what irreſiſtable force it carries every weaker body along with it; but when dilated and expanded, loſes its force, like a powerful army of ſoldiers broken and divided. So by the contraction of the funnels of our chimnies at bottom, and their uncom-

uncommon depth, we gather all the circumambient air the room affords in one body or column; and if there be any occaſion for more air, as is often the caſe, by reaſon of the cloſeneſs of the doors and windows, eſpecially when the fires are lighting up, let ſome of them be a little opened; more ſtrength will be added to the natural air of the room, which will impel the new-created ſmoke with more force and celerity; and conſidering, as it aſcends, it has the more ſpace to occupy, as our chimnies grow wider and wider, the ſmoke weaker and thinner, ſtill impelled by the ſtronger body behind, this will prevent any reverberating ſmoke coming down into the apartments, and diſcharge itſelf in the air, to the ſatisfaction, health, and ſpirits of the inhabitants below; which is the deſired end of this original plan.

In our third propoſition we promiſed to lay down the beſt and moſt effectual methods how to cure all ſmoaky chimnies, if they were not ſo bad as to render them incurable by age, ill uſage, or their unlucky ſituation.

If the fronts of your chimnies are too large, they muſt be contracted to the modern ſizes, as in the drawing. Firſt pull down as much as in the plan directed, that you may be enabled to form your flanks and throw over your arches, leaving no flats in your flanks, but carrying them up as far as neceſſary, that the ſoot may not reſt in quantities, or be attended with any inconveniences; then you may ſet your chimney jambs where you pleaſe. This method only followed, has, to my own knowledge, proved of great benefit to many, who were before greatly diſtreſſed beyond all patience imaginable.

I have ſet a breaſt-plate of iron of ſixteen inches breadth, and five feet or more in length, reſting on each flank of the chimny within, and placed two inches diſtant from the breaſt: it proved of uſe, but have ſince found the above plan infinitely preferable.

Another, and the leaſt expenſive experiment I have tried in my own houſe, on intolerable ſmoky chimnies, by only contract-

ing the fronts of them to the breadth of the range from right to left, from 12 to 24 inches, agreeable to the ſize of the room, and in height only three feet, leaving the old fronts or jambs of your chimnies juſt as they were, and the new fronts two inches within them, forming a ſquare all round, which you may ornament with marble or fine Dutch tiles at pleaſure; then ſetting an earthen pot on the top, ſucceeded far beyond my expectation: but this pot is very troubleſome, by reaſon of the fur or ſoot that ſo ſoon gathers therein, by the frequent fires: for it is not more than ten inches diameter, and conſiderably ſmaller than the top of the chimney; whereas it ſhould be larger than that funnel on which it reſts; and inſtead of being contracted in its width, ſhould be extended towards the top, by which the ſmoke would have the more room to diſcharge itſelf in the air, and conſequently loſe its force and be the more incapable of reverberating in the other funnels, and down to the adjoining rooms, as is commonly the caſe of all chimnies of the modern conſtruction.

I have known theſe pots ſo furred up with conſtant fires in two months, that the ſweeper could hardly get his hand through; which, when cleaned, all was well again. A little experience will prove theſe things beyond a doubt. Beſides, if theſe pots were made wider at top than bottom, as before obſerved, and larger than they commonly are, even as big as the chimney can well bear, or about 12 or 13 inches diameter, they would anſwer ſtill better than they do, and would not fur up ſo ſoon, or want ſuch frequent cleaning as they abſolutely muſt have. And if they were caſt ſquare inſtead of round, and widening at the top rather than the bottom, the whiſtling which is created by a high wind, playing round the cylindrical top, might be prevented, if not perfectly, yet in a great meaſure. I have known cylinder pots, though of great uſe reſpecting the ſmoke, taken away entirely for the whiſtling noiſe they make in windy weather. If they are well fix'd by able workmen, with the beſt tarras or lime, it will keep them ſafe from being blown off,

as well as if they were round. The rich and opulent who do nothing, and will not employ themſelves, are ſeldom eaſy, and too ſeldom pleaſed. Good ſpirits, the greateſt bleſſing heaven can beſtow on the rational creation, ſeldom fall to the ſhare of the indolent, be they ever ſo rich. The rich, though unhappy, by virtue of their ſuperabundance, would by no means, or for any conſideration, change circumſtances with the poor, or even with thoſe in middle circumſtances. But this I believe, that if thoſe who are in neceſſitous circumſtances were able to change with the rich, they would be ſtill more unhappy than they are at the preſent time, though it is impoſſible to make either believe theſe truths.

*Qui fit Mecenas ut nemo.* HOR.

If the funnels of your chimnies are any of them on the outſide walls of your houſes, and you cannot think of either the fronts within, or the tops without, being diſfigured, and the expence ſaved by the foregoing rules, let a very ſmall hole be pierced two or three feet above the fire-

place in the room from without; ſloping as much upwards as poſſible, as marked in the drawing of the three funnels of the kitchen chimney Y Y Y. This eaſy experiment has been found of ſurprizing benefit; and if it ſhould introduce too much air, or prove too cool for bettermoſt rooms, it is filled up in a few minutes. Many apply this remedy to the top of their chimnies, becauſe they cannot get lower; their funnels being all within the houſe, and receive much benefit from them, though they are intolerably ugly, and deform all the outſide with ſmoke. But as for this experiment *,

* If this hole be ever ſo ſmall, and rightly directed, it will be found of much more ſervice than thoſe are, whoſe ſize are ten times bigger. The benefit ariſing from ſo trifling an operation below, will not be juſtly known until the wind has been in every corner, I mean in every principal point of the compaſs; for I have found by experience that hardly any ſcheme anſwers equally to all. If it anſwers to three points, and proves defective in the fourth, the owner of the houſes muſt determine the thing; and if it be found of real uſe, and at any time after choaked up, it may be eaſily cleaned by the augur that firſt bored the hole, or a ſmall ſpit.

it

it was ſeldom heard of till now, though it is founded on reaſon and the nature of things.

When reaſon and art go hand in hand, and are juſtly conjoined, you may rely on that operation to anſwer the intended purpoſe the beſt; for if your houſe and chimney tops be lower than the adjoining houſes and chimnies, you are badly ſituated indeed; and it is ten to one but you muſt raiſe yours to the level with your neighbours, or never be effectually cured.

When the wind blows parallel with that higher eminence and the tops of your chimnies, the ſmoke that comes from the lower chimney being obſtructed in its natural courſe, like a ball, reverberates and forces its paſſage down the ſame funnel from whence it came, having no ſtronger power to oppoſe it; neither fire enough, nor ſtrength of air, which are both abſolutely neceſſary in ſuch a ſituation.

I have ſeen tops of chimnies raiſed to a very dangerous height, almoſt without a poſſibility of being ſupported, or tied with iron

ſpars; and tin funnels of 12 feet long placed on theſe dangerouſly raiſed tops, before the people could live in their own houſes. But this high chimney, ſo enormous in its kind, ſo dangerous, and to the laſt degree fooliſh, is ſuch, that no ſenſible thinking perſon would live in that houſe on any conſideration. One of theſe ſtands in King's-ſtreet, St. James's, at the end of the great aſſembly-room: it has ſtood theſe four years, but it is very amazing it was not blown down the firſt high wind that took its broad-ſide.

Many are the dangerous and too high chimnies in London, and it is miraculous that we are ſeldom viſited with ſtorms or hurricanes; for was one to happen, as God forbid, few or none of them but muſt inevitably periſh!——And if people, whoſe houſes are over-top'd by any new erections, would act conſiſtently with reaſon and their own ſafety, let them try any expedient whatever, but not build in contradiction to all the reaſon and common ſenſe in the world. Needy people are glad to find a houſe where money has been got before them;

them; but have neither prudence nor underſtanding to reflect on many dangerous circumſtances with which they are environ'd. It is incredible to believe the ſums of money that have been expended in London to cure ſmoky chimnies, and often to little purpoſe but being plagued with dirt and blundering workmen, who know very little of the cauſes or effects of any part of matter, ſo that it is merely chance if at any time they accompliſh the end.

By removing the cauſe, the effect will ceaſe. If a fire be lighted in the middle of any apartment, will not the ſmoke expand itſelf all over the ſame; but if a fire be put in its proper place, and the chimney fronts, funnels, and tops, be conſtructed agreeable to the directions of this little treatiſe, no doubt you may have clear and wholeſome rooms, the thing deſired.

And as examples are the moſt powerful monitors on moſt ſubjects, the ingenious reader may, at his conveniency, view the ſtrangeſt, the oddeſt, the ugliеſt erections, raiſings, or works, added at various and different

rent times, to the tops of the Admiralty chimnies, which undoubtedly coſt more money than would have built a good houſe; but the worſt is, all to little purpoſe.

Many blunders might be pointed out in the great and public works through the kingdom: all the ſaſhes of the firſt floor of that grand edifice are ſunk into the bottom ſtone or ſill, ſix or eight inches *; if one was on a parallel with them, on the other ſide of the way, he would clearly ſee into the extent of this abſurdity, but from the ſtreet they appear twice as large; the rain that beats againſt theſe windows is diſcharged by a piſtol bore through the ſtone ſill, which is hollowed like a trough, ſix inches deep, and runs down the fronts of the main wall, leaving a dirty mark all the way.

Another remarkable piece of art is ſhewn in the four ſtately columns that carry the portico in the center; for theſe columns are

* This was a remarkable blunder between the ſurveyor and the workman; but ſeems to be placed to the account of the architect.

only

only one diameter too long in their ſhafts, which are four feet *.

The cenſorious may condemn theſe collateral obſervations, which the ingenious and candid will not diſapprove, ſince they affect no character now living, and may be attended with real advantage to the public, if duly obſerved.

Before cloſing the ſubject, we ſhall illuſtrate the ſame with a fact which may be depended upon: A gentleman who had a houſe at the bottom of a hill or riſing ground, whoſe heighths were nearly equal, but the latter was higher than the tops of the chimnies. When the wind blew over this contiguous eminence, it blew the ſmoke back in ſuch clouds, that there was no bearing any fire therein. Of this an account was written to this author, and he gave thereto the following reply:

* This falls likewiſe to the honour of the architect.—A proper pedeſtal cut in the column would reduce the ſhaft to Ionian ſize: and as the preſent times can boaſt of ſeveral architects of inimitable merit, I hope ſoon to ſee theſe prepoſterous monſters rendered a credit to the greateſt and moſt ingenious people on earth.

SIR,

SIR,

You do me much honour by the favourable opinion you have ſo politely expreſſed, and in deſiring my advice, which I freely give, ſubmitting it to your own better judgment.

I find that the houſe was built before it was yours, and that the fronts of all your chimnies are too large, and the funnels too ſhallow.

In order therefore to give you relief from a ſmoky and dirty houſe, which I know you abhor, let your chimnies be contracted in their front to the ſmalleſt modern ſize, proportioned to the rooms; for a room of 20 feet by 16, 3 feet 2 inches in heighth by 3 feet 4 inches in breadth.

But firſt, all the fronts muſt be taken down, and the funnels be contracted about 14 or 16 inches from right to left, the deeper the better. Throw arches over from front to back, and carry up ſloping that the ſoot may not lie in flakes, as far as the workman can conveniently: perhaps this ſloping will anſwer beſt on one ſide, only

the

the tops of your chimnies muſt be raiſed higher than the contiguous eminence; for when the wind blows over, finding, as it were, a perpendicular opening, and the air collected into one column, it will be of vaſt force, eſpecially when acting in one direction joined with the ſun in his meridian: for his heat will over-power the natural body of air collected from the room below and the additional ſmoke, that it is no wonder if at ſuch ſeaſons, you were diſtreſſed with ſmoke and ſulphureous vapours.

But in the firſt place, raiſe the tops of your chimnies a few feet, and make two ſmall openings, one on each ſide, but not parallel with the diſtreſſing wind: cover the top with a large heavy flag ſtone, cloſely cemented with good lime or tarras, that it may be able to reſiſt the wind, and not be blown off. By this, the perpendicular direction of the air will be prevented, and on whatever point the wind ſets, there is a paſſage for the ſmoke, and a mean to prevent its reverberating into the apartments below; as has been found to the ſingular advantage of many perſons. If

If this experiment does not anſwer, make up the whole front of your chimney within two inches of the old jambs; a ſquare of that depth will fall all round, leaving only the ſpace of your grate for the opening, which may be from 24 to perhaps 15 or 16 inches, or more *; and let the heighth be from 30 to 36 inches, the lower the better; the loweſt bar of the grate not exceeding 10 or 12 inches from the ſlab. By this plain method, and ſetting a pot of good dimenſions on the top of the chimney, I have effectually cured ſeveral in my own houſe in King-ſtreet, St. James's, which were really intolerable.

The fronts of your new works may be covered with marble, or whatever is moſt agreeable to your fancy and taſte.

The leaſt expenſive methods often turn out the beſt; I heartily wiſh this may be the caſe in yours; if not, when you have tried the eaſieſt, and it does not anſwer, then let another be tried. I ſhall be glad to hear from you; and wherein I can con-

* This is meant only for ſmall apartments.

tribute

tribute to the happineſs of your family, freely command

Your moſt obedient ſervant,

W. BENEVOLUS.

In the 4th and laſt propoſition we promiſed to inſtruct our readers how to prevent all vermin being introduced into houſes, and clearing houſes of them, and of deſtroying the worſt kind, the bugs; a thing hitherto unattempted.

It is hard to aſcertain how this ſpecies was firſt introduced into England: probably they came with the French refugees, who fled from the perſecution of Lewis le Grand: they are ſo ſurpriſingly prolific, that if they get footing into one room, they will, if not prevented with the utmoſt care and attention, ſoon ſpread through the whole.

Whoever would have clean houſes, let them beware of introducing old furniture from any quarter: let the beſt workmen be always employed, particularly bedſtead-makers, chair-makers and upholſterers, eminent for cleanneſs, and of a fair character.

Now

Now to make a bedſtead, ſopha, or chair, ſo as no vermin can exiſt in them; take the beſt Engliſh oak, or any other good ſound wood, for your bedſtead frames: take eſpecial care that no cracks, holes, or ſplinters be in your whole piece of work; let both your head-board and laths be of oak, of a proper thickneſs, all well planed, ſmoothed, and neatly framed. Three days before you put up your bedſteads, lay them over in every part with a mixture of ſpirit of turpentine, mercury, and ſpirit of ſalt, all beat up well in a mortar; but more particularly prime all the mortices within very well, and all the ends of your tenons, and alſo the tops and bottoms of your poſts, even before you put on the caſtors; this done, you may put up your bedſtead and furniture, and be ſatisfied that no vermin will exiſt in the firſt, though in the ſecond they poſſibly may.

Thoſe who pretend to cure bedſteads and chambers from vermin, and do not take the bedſteads and furniture down, nor rip off the ſkirting, and even the top cornices of the

warmeſt corners of the room, do only deceive their employers, like the quacks, who heal the outſide of a ſore, but leave the canker-worm within; which, in a little time, breaks out worſe than ever.

If any bugs be in a room, the beds there will never be clear, unleſs the warmeſt corners be taken down: if there be none at the fire ſide, or in the ſunny corners, you may be ſure there will be none in the cooler parts. I have known thouſands on the back part of the ſkirting, which being pulled down, and carried into the back-yard, was laid over with ſpirit of turpentine, &c. well fired, and then ſet up again when there was an effectual cure.

Before you put up thoſe parts of the wainſcotting, let them all be well primed with the mixture abovementioned, and you will have good reaſon to expect a real remedy: but if theſe methods do not anſwer, it is owing to the oldneſs of the houſe, to which a new one muſt ſucceed as ſoon as poſſible.

If the furniture of any bed be of ſuch a nature that it cannot be cleaned at home,

it muſt be ſent to the beſt ſilk-dyer or ſcourer, and all the fringes and every part of it taken to pieces; without which, even they only who can do it, are unable to anſwer for its being done to perfection.

If any old bedſtead, or even new be infected, let them be taken down throughout: let the whole be well prim'd, particularly within the mortiſes, with the ſpirit of turpentine, &c. then all fired and well ſcraped within the mortiſes with chiſſels; and before you put them up, be all primed with the mixture above preſcribed. A good old bedſtead, thus treated, will be little worſe than a new one. But if you can ſpare your bedſteads for ſome weeks or months, commit them naked to the yard or out-houſe, which will be of ſingular uſe, exceſſive heat or exceſſive cold being the abſolute cure of all vermin.

*How to know if there be Vermin in a Bed, without taking it down.*

Unrip the furniture from the warmeſt top corner poſt of the bedſtead; and with a lighted candle examine cloſely, for if any be

be in the bed, that is their principal place. If you ſee none, rub the top of the bedſtead pretty hard with your fingers, for there may be eggs almoſt inviſible, which will ſmell as rank by ſtrong rubbing, as if alive: for in warm weather, or in a warm room, they are ſoon diſturbed, and quick in their motion.

By this method, you will ſee in a minute or two the real caſe. I have known but one in a very fine bed, and that was brought in by a gentleman the firſt night he lay in it: the bug, on examining the place, was detected; but no remainder was left behind, to the no ſmall joy of the proprietor, a lady, who never had a ſingle complaint of that kind theſe three years.

Theſe vermin lay their eggs in the warmeſt and ſafeſt places of beds and furniture; nay, in holes and corners: and if a male and female are introduced, they propagate ſurpriſingly. Their eggs are firſt white, and like ſmall grains of whiting or chalk; but in a few days grow bigger, and perfectly black, like ſmall grains of gunpowder; and

when they firſt begin to move, they are as complete and perfect in their parts, as when they arrive at their largeſt ſize, yet are but juſt perceptible by the naked eye. When they arrive at maturity, the male is larger than the female, but of a blacker brown: if two remain undiſturbed for two ſummers, they engender thouſands if the apartments be warm: but the cold deſtroys both them and their eggs, as it does every other thing. There are many ſkins which they will not touch: thick and dark ſkins are not their favourite ſoil: a ſtranger who has a fair ſkin, ſtands a chance of being bitten by them: ſeveral perſons have in one night's time been ſo ſtung by them, as to be left next morning like one in the ſmall pox, and in an high fever beſides.

A gentleman travelling once thro' Italy, lay in as fine and clean apartments as could be, and on bedſteads of poliſhed iron, drawn every night to the center of the floor of the room: he was often devoured, in a manner, by them; he averred, they droped from the cieling, perpendicularly upon him,

him, and were often gone before he could get up, returning to their holes in the corners of the room, or cornices, where there might be ſome rends in the plaiſter walls.

Many beds have been hung like ſailors hammocks, and yet the ſleepers in them have been ſerved the ſame way; but we hope that the remedies propoſed will be duly attended to.

*How to cure Kitchens and lower Apartments from Black Beetles.*

Take about 30 or 40 gallons of boiling hot water, and mix a quantity of limeſtone in it, until it be as thick as cream; then take four pounds of the coarſeſt brown ſugar, and half a pound of arſenic; mix them all well, and keep them in quick motion, for the arſenic will preponderate inſtantaneouſly, unleſs it is prevented by very quick agitation; then take a ſquirting machine, and by it inject this in every corner and crevice of the kitchen or room where the vermin are: then float your kitchen with cold water, and two nights after take

coarſe brown ſugar mixed with arſenic, and lay all round the corners of the apartments, which will, if properly managed, deſtroy all both within and without. When you are clear of them, let the remaining lime and water be uſed in plaiſtering up every crevice and ſuſpected place in the rooms. But if there be any wood in the floors or wainſcotting of the rooms, under which the vermin find ſhelter, all muſt be converted into ſtone floors or plaiſtered walls, elſe our labour is vain.

As arſenic is a frightful name, I would recommend the above operations to be done in private, and when the family is out of town.

*How to clear Kitchens from Flies.*

Take of the ſame water preſcribed for the beetles, and let all the walls and cielings of your kitchen and apartments where the diſtreſs lies, be well primed, and thoroughly waſhed over; give them of the ſame ſort of ſugar to feed upon for ſome days, and you will ſoon get rid of them.

But

But if this method prove abortive, ſhut up your kitchen very cloſe (or any other apartment where they trouble you) and funk them well with brimſtone: this method has been found of excellent uſe in garrets infected with buggs, but the wainſcotting muſt alſo be ripped up, and ſerved as before directed.

*Quicquid agunt homines votum, timor, ira, voluptas*
*Gaudia, diſcurſus, noſtri eſt farrago libelli.*

IF it be true that no poſition, either
philoſophy or theology, has hitherto
been advanced, but has met with oppo-
nents, and a lamentable truth it is that
often the patrons of oppoſition to the moſt
excellent and obvious maxims which tend
to the good of ſociety, find infinite num-
bers that eſpouſe their cauſe: the more ri-
diculous, the greater numbers often follow
them. From hence is ſeen the abſolute
neceſſity of government under proper laws
and ſanctions, and the inſpection and direc-
tion of virtuous, ſteady, and intelligent
men; ſuch, and ſuch only, are the glory
and dignity of human nature! For though
it be true that ſeveral excellent perſonages
have been barraſſed all their life-times, and
ſuffered death at laſt, by deſigning and ſelf-
intereſted men; yet it is as certain that the in-
ward

*Feb.* 16, 1769.

*Nemo vir magnus ſine aliquo afflatu Divino unquam fuit.* TULL.

IF it be true that no poſition, either in philoſophy or theology, has hitherto been advanced, but has met with opponents, and a lamentable truth it is that often the patrons of oppoſition to the moſt excellent and obvious maxims which tend to the good of ſociety, find infinite numbers that eſpouſe their cauſe: the more ridiculous, the greater numbers often follow them. From hence is ſeen the abſolute neceſſity of government under proper laws and ſanctions, and the inſpection and direction of virtuous, ſteady, and intelligent men; ſuch, and ſuch only, are the glory and dignity of human nature! For though it be true that ſeveral excellent perſonages have been harraſſed all their life-times, and ſuffered death at laſt, by deſigning and ſelf-intereſted men; yet it is as certain that the inward

ward tranquillity and eſſential happineſs, (both living and dying) of the former, is as ſuperior to the latter, as light and chearfulneſs of mind is preferable to Egyptian darkneſs and horror.

The preſent times afford too, too many inſtances of theſe truths; and I appeal to every ſenſible and thinking being, whether in the late and immediate ſhameful and ſcandalous diviſions about a Catiline, his eſpouſers and partizans have not at all times acted and ſpoke ſimilar to their patron's words and actions, foaming out ſedition, calumny, and falſhoods againſt the peace of ſociety in general, and many virtuous men in particular, without any the leaſt regard either to ſacred or civil characters, and the beſt of princes that ever lived!

I know it is impoſſible to convince or reform mankind from errors, after they have ſo openly avowed and juſtified themſelves and their patron. But it is not to the prejudiced and partial we appeal, 'tis to men of judgment and virtue; who dare oppoſe and ſtep forth boldly, to ſtop and ſtem the tor-

rent of ſedition, however tremendous! To theſe great ſouls we owe all that is valuable here; and 'tis to them, and them only, their writings, actions, and examples, we have any tolerable proſpect of a happineſs hereafter.

My motto has laid down theſe poſitions as abſolute truths; that is, that no good man ever exiſted, but his excellent actions were directed by heaven. And I have ſo much charity, even for this patron of ſedition himſelf, and for his ſenſible adherents (if any be) that neither he nor they will have the aſſurance or effrontery, to aſcribe any of their writings or actions to celeſtial cauſes, but ſurely to the evil ſpirit, who ſows diſcord and malignity among the licentious and profane ſons of men.

Is it poſſible, that men who believe the exiſtence of an infinitely wiſe, juſt, good, and merciful Being! and that they are accountable for their actions, if not always here, yet certainly hereafter, to fly in the face of all laws, civil and religious, as this Quixote and his adherents have done ſo

long;

long;—even ever ſince the general peace; to which, for univerſal good to mankind, particularly to Great Britain, no treaty ever before can be compared?

For bleſſed are, ever were, and ever will be, the peace-makers; for they are, ever were, and ever will be, the children of God.

W. BENEVOLUS.

*March* 16, 1769.

Addreſſed to Lord Eg——t.

*When wicked men bear rule, the poſt of honour is a private ſtation.* Addiſon's Cato.

I Cannot tell whether any other apology can be made for this celebrated ſpeech, than that the ſpeaker, who is ſuppoſed to utter it, was at that period of time in a delirium; as every one, both before and ſince, who acts ſuch an unnatural part, ever was and ever will be; and I do appeal to every

ſenſible

ſenſible perſon, whether reverſing my motto is not full of more noble ſentiments and ideas, which, if brought forth into action, muſt tend to the abſolute good of mankind, as it always has done in every nation of the world.—If great and illuſtrious characters have not been the inſtruments in the hand of Providence, of preſerving and delivering every nation from cruelty and oppreſſion, who, or to whom can we aſcribe the infinite benefits thoſe nations of ours have enjoyed for theſe hundred-and-ſeventy years juſt elapſed: for undoubtedly had it not been for them, and them only, we had been at this day in the horrid darkneſs of barbariſm, or pontifical ſlavery; ſo that I am almoſt perſuaded, "when wicked men "bear rule, the poſt of honour is the *public* "ſtation." Since no real merit can be juſtly aſcribed to any general or ſtateſman, who never had any difficulties to encounter, or turned his back on his country in diſtreſs and danger; ſo in proportion to the arduous circumſtances with which either have been involved, and gained the deſired end, the happi-

happineſs of their own people, they have or ſhould have been crowned with immortal honour: for ſure neither general, ſtateſman, nor ſea-captain of noble courage (who had above all other objects the good of their king and country at heart) gained laurels by turning their backs on their country's foe.

If it be an undoubted maxim here, that a diſturbed liberty (now and then) is infinitely to be preferred to a quieſcent ſlavery, how glorious then is public ſpirit, when conducted with judgment and honourable motives; but when any of theſe eſſentials are wanting, all that ſuch empty bladders can accompliſh, is nothing but noiſe and faction.

We have no occaſion to go further back than the hiſtory of our own times, in ſearch of great ſtateſmen, and illuſtrious captains both by ſea and land—at whom poſterity will undoubtedly ſtand amazed! but more particularly within theſe eight or nine years juſt elapſed. Here is the wonderous æra! I defy the annals of England, or of Great Britain, to match them, tho' that ſilly and

imper-

impertinent queſtion has been often aſked, Who were the Engliſh miniſters by laſt poſt?

Indeed it muſt be confeſſed, they have all meant well in every plan they adopted; that is, if doing and undoing one another's ſchemes contributed to the ſervice of their country: none of their predeceſſors could compare with them in the leaſt degree; but the great misfortune is, too frequent conceptions bring forth nothing but wind and vapour!

The wiſe King of Iſrael ſaid, *that when wicked men are in power, the people mourn*: and if it was not for this glorious hope, that although they ſpread their influence abroad, for a while look freſh and gay like the green bay tree on the fruitful plains of *Indoſtan* *, yet they are ſoon cut down, periſh, and wither away, ſo that their place is no where to be found.

* In Auguſt, 1769, ſuch bad news came from India of Hyder Aly having beat the Company's forces, that their ſtocks were fallen more than a half of what they were before the news came.

To

To find out great and good miniſters here, is a great and arduous taſk indeed, conſidering who and with whom they have to do; and it is as certain, that as infallibility falls not to the ſhare of humanity, there is no individual or body of men, but in many particulars deſerve cenſure; ſo that when any are raiſed aloft on a ſudden, they are viewed like a beacon on a mountain's top, and all their foibles, follies, nay, and many, even natural defects, exaggerated beyond reaſon, or the impartial expectations of diſcerning minds. For it is certain, if Gabriel was commiſſioned from on high, he could not pleaſe every body; and it would be miraculous if he gained the majority on his ſide, though he worked wonders for the good of all.

No mortals ſure, except thoſe of juſt ſenſe and feeling, can poſſibly imagine the difficulties and perplexities the beſt of ſtateſmen undergo; and indeed none but great ſouls, who can bear them, ſhould ever undertake ſuch Herculean labours. One thing I am perſuaded of being a truth, which

which none of understanding will deny, that there are now as great and able men in this present age, as ever any age could boast of; and it would not be a very difficult matter to point them out, since one of the greatest orators that ever lived has told us who they are that should preside over the people. Says he, they should be blameless, *i. e.* men of good report—not lovers of gold—not novices—the husband of one wife, having children.

I shall close this epistle with one observation more, that if any of these characteristics are wanting in a minister of state, he or they, when weighed in the balance, will soon be found wanting in many more.

W. B.

For the PUBLIC LEDGER.

Jan. 30, 1771.

To GEORGE STEADY, Esq;

Sir,

I Cannot help congratulating my country on the news of Spain's humble condescension in disavowing the act of their governor's seizing Falkland's Island, and after keeping it eight months, being obliged to deliver it back, with whatever belonged to us; and though their renunciation is equivocal enough, yet we hold it as sure as Gibraltar or Port Mahon—For though the latter was wrested from us in the beginning of the last war, the traitor paid as high a price for his cowardice as was possible to be given. As for the former, whoever means or thinks ever to neglect, abandon, relinquish tamely, or privately give up, on any terms or consideration whatever (though exchanged for the Peruvian mountains) deserves to be hung as high as Haman, because

cauſe it firſt coſt us a very high price, and is of infinite value for our trade and navigation; is as a key to the whole Mediterranean, and like mighty opening doors, under Britannia's direction, takes in, and ſhuts out friends and enemies, as beſt anſwers her intereſt, honour, and glory. Great politicians often, at particular ſeaſons, inſinuate many things they never intend to do or countenance; and if the late celebrated S——y L—d S—d—h ſaid that it was of little conſequence to Great Britain, he ſurely meant only to ſooth Spain with his depth of politics, as was practiſed in the beginning of the reign of George I. But I muſt beg leave to acquaint him, if he ſupports that doctrine, or recriminates his old fat ballads, which his confeſſor Parſon Truliber uſed to rant for his lord and maſter's entertainment, and at the ſame time beat his lordſhip quite out of the field, he may depend upon this as an infallible truth, that he will not hold his preſent honourable ſituation much longer than he held being Secretary for the Northern Department. I wiſh this

laſt convention with Spain, &c. be not as poorly founded as the principles of the Twitchers! If ſo, it is impoſſible to exiſt long, but fall to the ground, becauſe it has no ſolid foundation. Every ſenſible and ſpirited Briton expected adequate and proper indemnifications for the atrocious inſult and immenſe expence, the conſequence of it; but it ſeems we have, or are to have no more than equivocal words, that nobody can poſſibly underſtand, and that if the principals themſelves do, that is the queſtion.

However theſe things may be, we have this conſolation, that a little time will clear up theſe matters, if poſſible, and alſo illuſtrate, whether the Family Compact was not at the bottom of this raſh act of the great Spaniſh Monarch, who, in conjunction with his dear brother, (for I will not join their able miniſters in the groupe, being that would rob their maſters of the principal honour) believed the Britiſh nation were all at variance with one another, becauſe, for theſe ten years paſt, ſo much

ſcur-

ſcurrility and nonſenſe has been publiſhed, not to our honour, to be ſure: but theſe ſagacious monarchs forgot that true fable, and its eſſential meaning, of the Bull and his Dogs.

It is certainly a great and glorious work to produce good from evil intentions or actions; and whether the conſequence of this raſh act may end in war or peace, it is hard to ſay; but this we may ſay truly, that it has rouſed the Britiſh Lion a little, foiled the republicans, routed and diſperſed their ſcandalous caballing, and united every ſenſible and true Briton to the intereſt of their country, and honour of their moſt excellent ſovereign, whoſe greateſt joy muſt, does, and even will chiefly conſiſt in mildly governing the braveſt, moſt opulent, and moſt ingenious people on earth.

*Si quid noviſti rectius iſtis,*
*Candidus imperiti ſi non his utere mecum.*

W. B.

*London, April 28, 1771.*

**To the Printer of the PUBLIC LEDGER.**

*Salus Populi ſuprema Lex.*

HAving no particular knowledge of any of the contending parties, as a free citizen of the world, and friend to the public good, I think it a duty incumbent on every man to throw in his mite on every important occaſion, where public benefit is really concerned; and do ſeriouſly appeal to many eminent artizans themſelves, how often they have almoſt ſuffered ſhipwreck in navigating their ſumptuous barges from the city to Weſtminſter, and in their return, by being run faſt and fixed, on the ſand banks oppoſite to Durham-yard, which have increaſed with the buildings ten fold, almoſt within theſe ſixty years. The hurt and danger of theſe growing ſand hills is a matter of weight, and calls for the ſerious attention of the legiſlature.

I was extremely pleaſed to hear, that the

Hon. Houſe of Commons had approved of the embankment and the encroachments on the river there, and that the moſt Honourable Houſe of Lords had that matter before them now for their judgment on the ſubject, and am fully of opinion, they will almoſt unanimouſly agree with the lower houſe, for the following, and many better reaſons than I modeſtly can, or intend to offer, viz.

That all matter, whether liquid or condenſed, holds the ſame direction, and ever will, which was given it in the beginning: that is, takes the neareſt way, and makes the ſtraiteſt line to their deſtined place, if not forced out of its natural direction by objects lying in its way, or drove with ſuperior ſtrength by the wind, which nothing could reſiſt, if not reſtrained by the Author of its being!

The embanking the river, and encroaching on the muddy hollow ſide from the north corner of Weſtminſter-bridge to the parallel corner of Blackfriars-bridge, makeing fine buildings, wharfs, &c. &c. after

that amazing and elegant pattern executed on the dunghill of old Durham-yard, would beat every thing of its kind in Europe, and feed thouſands of the beſt workmen in the world, who muſt travel to other countries for ſubſiſtence, if not ſupported by the brave and generous, who add a more ſuperior dignity to human nature, than all the ſtock-brokers in the world.

This embanking will contribute to the ſafety of the navigation, becauſe it will make clear and ſafe a great part of the river which now is nothing but ſoil, and it will throw the whole quantity of water which occupied that ſoily part of the river on the oppoſite ſide, and, by degrees, clear the ſandy banks quite away to the depth where it can be of no detriment, but quite abſorbed. To effect this deſired end, let the ſandy hills be torn up by machines, whoſe extremities are neareſt the deep water, or the north end be often dug and looſened, and left to the winds and tides; it is probable, by a little art and proper care, that more of theſe obſtructions will be annihilat-

ed in a year, than has been carried off in boats for theſe twenty laſt paſt. The celebrated Addiſon obſerves in ſome part of his writings, that the excellent buildings finiſhed by Louis le Grand during his reign, brought more money into France from travellers than they coſt in building; let us imitate the noble examples of even our enemies, but their tyranny and oppreſſion of the ſubject ever abhor.

If any real gentleman is of a different opinion, ſhall be exceeding glad of being properly convinced, I am open to conviction, and always joy in ſalutary argumentation.

*Si non hic mecum.* HOR.

W. B.

*May* 6, 1771.

To the Printer of the PUBLIC LEDGER.

WE are told by the papers, that the city had preſented a petition imploring his Majeſty not to paſs the embanking Bill of the river Thames.

I was

I was ſorry for this ſtep, becauſe it wears the face of obſtinacy, and indicates a want of underſtanding. Can it be ſuppoſed, that the King will reject a Bill, paſſed by both Houſes of Parliament, with the maturest deliberation that could be wiſhed? *Salus Populi ſupreme Lex*, is, and indeed ought to be, the abſolute rule and guide of every wiſe adminiſtration; if it had not been ſo upon former occaſions, this famous city itſelf, at this day, would be little better than a filthy channel, ſuch as Durham-yard was, but two years and a half ago!

Was it not for this ſupreme law, neither fleets nor armies, magazines, public or private good buildings, bridges, roads, turnpikes, or manufactories, ſhould we have had, even to this period; no Mr. Printer, we ſhould have been like the uncultivated Hottentots, whoſe manners are much the ſame now, as England's about ſeventeen hundred years ſince.

Is it poſſible for any impartial and ſenſible man to believe, that the embanking of the river Thames will not improve the navigation

vigation of it; when it is certain, ſome hundred years ago, the Strand in London was a branch of it, and now more than twenty thouſand houſes are built on that antient embankment? The river, before theſe neceſſary encroachments, was hardly navigable for any thing; and by this freſh embankment, will undoubtedly be greatly improved; for the navigation, by being circumſcribed in a narrower compaſs, will conſequently be deeper and ſafer. Beſides, the filling up of the great hollow belly of the north ſide from one end of Weſtminſter-bridge to the parallel end of Blackfriars, will throw ſuch a weight of water on thoſe intolerable ſand-banks oppoſite, that by the aſſiſtance of art, properly uſed, in tearing up their ſurfaces and extremities, added to the natural ſtrength of the current, and the flux and reflux of the tide, as muſt carry off thoſe ſhameful nuiſances; and give inexpreſſible joy to every diſcerning and impartial mind.

*Jam nova progenies Cælo!*

W. B.

*June* 10, 1771.

To the Printer of the PUBLIC LEDGER.

IN ſome of the papers the other day, there appeared a letter addreſſed to my Lord Chatham, which told us that all the "victories we gained in the laſt glorious "war, were thrown away by a temporary, "inglorious, and deſtructive peace."

It is ſaid (perhaps with truth) that the peace might have been better; but this is only a poſition, and carries no argument along with it. The true queſtion is, whether the laſt peace was not more honourable and advantageous, than carrying on the war any longer could have been?

There is a ſaying, which is allowed to be an excellent one, that the concluſion of all works crowns or kills the whole; and had we miſſed reducing the Havannah, it is a thouſand to one but all our former victories had been uſeleſs, and that a peace muſt have been made, though ever ſo indifferent.

ſergnt. Eighteen millions beſides muſt have been provided for the ſucceeding campaign, and ſeventeen thouſand men were wanted in Germany, where nothing could be expected further.

If any treaty in hiſtory, antient or modern, could with propriety be denominated adequate, great, and glorious, this ſure under conſideration, deſerves theſe noble epithets: becauſe it took in and comprehended more of this globe, than any other which can be named, a great part of Europe, Aſia, Africa, and America.

If it be a truth of undoubted certainty, that the abſolute ruin of the greateſt conquerors has reſulted from their not ſtopping where they could well govern, and utterly neglecting that golden rule of treating others as they would wiſh themſelves to be treated, it muſt appear to every humane and ſenſible mind, that the laſt general peace was of infinitely more value than if we had conquered and kept all the gold and ſilver mines both of Mexico and Peru; becauſe too much gold, without honeſt induſtry,

duſtry, has been the deſtruction of their poſſeſſors, and ever will prove ſo. Beſides, there is a neceſſity of preſerving a proper contraſt in trade; for it is a certain fact, that when Guadalupe and Martinico were in our own hands, and the ſeas at that period much clearer of privateers than before, we paid ten-pence per pound for ſugars, though before we gave only ſeven-pence. Such is the honeſty of mankind; and to illuſtrate this mode of reaſoning, let me aſk, if there were but one baker in a pariſh, would the inhabitants be ſo well ſerved in any reſpect, as when a dozen ſollicit for their cuſtom?

W. B.

THE END.

## ERRATA.

THE ingenious and candid Reader will ſee, in page 18. the *acute* triangle, which deſcribes the flanks of the arches, by miſtake called *equilateral*, &c.

As *arſenick* has a frightful meaning, it may be excluded in all the operations, and the ſpirits of ſalt or turpentine uſed in its ſtead.

Joiſts of wood may, with propriety, be uſed over all the arches, and floors of wood inſtead of plaiſter or tarras, according to every gentleman's fancy or inclination.